DOCUMENT RESUME

ED 109 375 95 CE 004 208

AUTHOR	McKinlay, Bruce
TITLE	Developing a Career Information System: Final Report.
INSTITUTION	Oregon Univ., Eugene. Career Information System.
SPONS AGENCY	Manpower Administration (DOL), Washington, D.C. Office of Research and Development.
REPORT NO	DLMA-82-41-72-03-2
PUB DATE	Mar 75
NOTE	218p.
AVAILABLE FROM	National Technical Information Service, Springfield, Virginia 22151 (No price given)
EDRS PRICE	MF-$0.76 HC-$10.78 PLUS POSTAGE
DESCRIPTORS	Career Planning; Computers; Data Collection; Delivery Systems; Educational Programs; Educational Research; Information Retrieval; *Information Systems; Interagency Coordination; *Job Market; Labor Supply; Occupational Guidance; *Occupational Information; Questionnaires; *State Programs; Statewide Planning; *Systems Development
IDENTIFIERS	Career Information System; CIS; *Oregon

ABSTRACT

The report reviews three years of progress toward implementing the Career Information System (CIS), a statewide interagency consortium that provides current labor market and educational information in usable forms to students and clients and assists in the integration of such information into schools and social agencies in Oregon. The system's purpose is to improve career choices and training opportunities. CIS enhances the efforts of agencies and schools by synthesizing labor market and educational information; developing and managing delivery systems; and consulting on the use of career information in counseling and instructional programs. CIS operates as a cooperative, controlled and supported by the agencies it serves. Essentially, the report is an effort to aid others who may attempt such statewide efforts. The response of students and clients and the results of pilot tests indicate the system's effectiveness with diverse populations. The seven chapters discuss the research, the CIS system, information development in detail, the necessary features of a career information delivery system, analyzed through a review of the literature, several types of services, the impact on users, and financial considerations. Appended materials include: the constitution, user service agreement, standards, organizational sources, a library classification system, forms, and a glossary. (JB)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED109375

Career Information System

Career Information System (CIS), a statewide interagency consortium, provides current labor market and educational information in usable forms to individuals, schools and social agencies. The purpose is to improve career choices and training opportunities.

CIS enhances the efforts of agencies and schools involved in occupational counseling and education by:

- Collecting current labor market and educational information and developing it into usable forms
- Developing and managing delivery systems
- Consulting with user agencies on use of career information in counseling and instructional programs

Career Information System
Office of the Director
247 Hendricks Hall
University of Oregon
Eugene, Oregon 9740[illegible]
(503) 686-3872

BIBLIOGRAPHIC DATA SHEET	1. Report No. DLMA 82-41-72-03-2	2	3. Recipient's Accession No.
4. Title and Subtitle DEVELOPING A CAREER INFORMATION SYSTEM			5. Report Date March, 1975 6.
7. Author(s) Bruce McKinlay			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Career Information System 247 Hendricks Hall University of Oregon Eugene, Oregon 97403			10. Project/Task/Work Unit No. 11. Contract/Grant No. DL 82-41-72-03
12. Sponsoring Organization Name and Address U.S. Department of Labor Manpower Administration Office of Research and Development 601 D Street, N.W., Washington, D.C. 20213			13. Type of Report & Period Covered Final Report 14.

15. Supplementary Notes Supercedes report entitled "Oregon Career Information System: An Evaluation of Phases I and II of a Three-Phase Development Project," March, 1974.

16. Abstracts Career Information System (CIS), a statewide interagency consortium provides current labor market and educational information in usable forms to students and clients, and assists in the integration of such information into schools and social agencies in Oregon. The purpose is to improve career choices and training opportunities. CIS enhances the efforts of agencies and schools by synthesizing labor market and educational information; developing and managing delivery systems; and consulting on use of career information in counseling and instructional programs. CIS operates as a cooperative, controlled and supported by the agencies it serves. Essentially, the report is an effort to aid others who may attempt such statewide efforts. The response of students and clients has been impressive, and pilot tests confirm the System's effectiveness with diverse populations. This requires a staff of information development, user services, and management specialists. In its first four years, use has doubled annually from 15,000 in 1971-72 to 140,000 in 1974-75, and users now support virtually all of the operating costs.

17. Key Words and Document Analysis. 17a. Descriptors

Computers
Counseling-vocational interests
Demand (economics)
Economic conditions
Education (includes training)
Effectiveness
Employment
Evaluation
Information systems
Job analysis
Job description
Labor
Manpower
Manpower requirements
Questionnaires
Salary surveys
Schools
Skilled workers
Specialized training
Students
Supply (economics)
Systems analysis
Technical schools
Unskilled workers
Vocational guidance

17b. Identifiers/Open-Ended Terms

Career Information System

17c. COSATI Field/Group 5B, 5I

18. Availability Statement Distribution is unlimited. Available from National Technical Information Service, Springfield, Va. 22151.

19. Security Class (This Report) UNCLASSIFIED — 21. No. of Pages 222

20. Security Class (This Page) UNCLASSIFIED — 22. Price

FORM NTIS-35 (10-70) (REV. 3-72) THIS FORM MAY BE REPRODUCED USCOMM-DC 14952-P72

ED109375

DEVELOPING A CAREER INFORMATION SYSTEM

FINAL REPORT
CONTRACT NO. 82-41-7203

Submitted by:

BRUCE MCKINLAY, PROJECT DIRECTOR

On behalf of the Oregon Career Information System, a consortium with representation from the Oregon Board of Education, the Oregon Employment Division, the Oregon State System of Higher Education, intermediate education districts and local school districts.

OCTOBER, 1974

This report was prepared for the Manpower Administration, U.S. Department of Labor, under research and development contract No. 82-41-7203 authorized by Title I of the Manpower Development and Training Act. Since contractors performing such work under Government sponsorship are encouraged to express their own judgment freely, the report does not necessarily represent the Department's official opinion or policy. Moreover, the contractor is solely responsible for the factual accuracy of all material developed in this report.

TABLE OF CONTENTS

CHAPTER I. SUMMARY AND COMMENTS ON FURTHER RESEARCH 1

CHAPTER II. INTRODUCTION 7

Background 7
Organizational Structure and Function 18
Arrangements with Data Producing Agencies 23
Population Serving Agencies 28
Summary 33

CHAPTER III. INFORMATION DEVELOPMENT 35

Economics of Information Development 35
Information Sources 43
Career Planning Information File Maintenance 59
Evaluation of Information Content and Timeliness 73
A Planned Labor Market Data System 81
Summary 85

CHAPTER IV CAREER INFORMATION DELIVERY SYSTEM 87

Necessary Features of an Information Delivery System for Career Planning 87
The QUEST Questionnaire and List 89
Information Components 98
Ease of System Usage 113
Continuing System Development 114
Summary 124

CHAPTER V. SERVICES TO USERS 125

Marketing, In-Service Training, and Follow-Through on Career Planning Information Usage 125
Integration of System into Oregon 134
Geographic Coverage of CIS Service 136

CHAPTER IV. IMPACT ON USERS 139

Impact of Information on Individual Career Planning 140
Major Observations About Career Planning Process 155
Summary 157

CHAPTER VII. FINANCIAL CONSIDERATIONS 159

Information Development Costs 160
Computer System Costs 165
Costs of Working with User Agencies 166
Fee Schedule for Services 169
Financial Support from User Agencies 172

APPENDICES

A. Constitution 175
B. User Service Agreement Between the Coos County Intermediate Education District and the Career Information System, 1974-75 180
C. Standards for Use of the Occupational Information Access System 183
D. In-Service for Linn-Benton 188
E. Major Organizations and Agencies Producing Occupational Data 189
F. Classification System for CIS/MIC Library 191
G. Information Development Forms 194
H. Numerical List of CIS Occupations 206

Glossary 211

LIST OF TABLES AND CHARTS

Table		Page
1.	Major Information Sources	45
2.	Data Sources Used for Updating Descriptions, Sample Quarter, 1972	56
3.	Counselors' Ratings of Topics or Information Contained in Occupational Descriptions	76
4.	Thal-Larsen's Model Labor Market Information System and CIS Data Needs	82
5.	Frequency of Client Use of Specific Information Components	99
6.	Component Usage, Spring 1974	112
7.	Satisfaction with Career Information Location	132
8.	CIS Penetration in Oregon	137
9.	Clients Who Indicated They Would Use OIAS Again If They Needed Job Information Later	149
10.	Clients' Recommendations About Keeping OIAS at the Employment Division	150
11.	Time Required to Process Data	165
12.	Computer Space Requirements for CIS Programs	166
13.	Growth of CIS Usage	173

Charts

Career Information System Organization Relationships	22
Career Information System Flow Chart	70

CHAPTER I

SUMMARY AND COMMENTS ON FURTHER RESEARCH

The Career Information System is not a conventional research project in which a research report is the principal product. Instead, it is an attempt to institute a systematic information development program and to implement and manage an effective system for delivering information to program planners and clients, all through the cooperative efforts of established institutions.

As a concept and as a functioning organization, the Career Information System (CIS) can be viewed both as a system itself and as a component designed to complete a larger system. As a component, the principal CIS goal is to bridge the gap between the producers and the consumers of occupational labor market information. The resulting CIS functions are both catalytic and contributory. Facilitating interagency cooperation and communication is an important part of systematic information development and use. Likewise, CIS must contribute efficient research, management, and service activities through its own staff. Both system functions are essential to evaluation of CIS activity and impact.

This review comes as CIS is completing its third year of implementation of the system. It cannot attempt to reach final conclusions on all matters, but it can describe and assess progress to date on the many aspects of program implementation. Obviously some matters, such as information development methodology, are dealt with early in such a project, while others, such as implementation in agencies occur later. This report documents work completed and critiques both the methods and the progress to date, so much of the subject matter is not amenable to experimental design. Essentially, the report is an effort of the Oregon CIS staff designed to aid others who may attempt such statewide efforts. Numerous examples are drawn from the Oregon experience, but the intent is to summarize the experience and to provide some guideposts rather than simply to document the Oregon project.

Background and Organization

Realization of the need for coordinated management of occupational information antedated the formation of the Career Information System. When representatives from data-producing and occupational information-using agencies began to assess the need and possibilities of responding to it, several factors converged to make CIS a reality. The Oregon Employment Division was involved in substantial

occupational labor market research; the Oregon Board of Education was developing a major career education thrust, and the Occupational Information Access System was proving an effective means of delivering occupational information to individuals involved in occupational exploration and career decision-making. These factors and the unified commitment of the group of agency representatives eventually resulted in a proposal for establishment of the Career Information System as a model interagency consortium with the purpose of providing direct access to current career and labor market information in forms meaningful to students and clients and integrated into schools and social agencies in the state. With essential endorsements and pledges of cooperation from the heads of pertinent state agencies and local institutions, the Career Information System was established under the authority of a Board and a staff was organized to compile labor market data and facilitate the integration of career information into agency and school counseling and instructional programs. CIS has developed strong working relationships with its user agencies, entering with them into formal agreements which clearly communicate the specific responsibilities of each; it has involved these user agencies in continued development of the CIS function and has specified and obtained agreement on "Standards for Use" of the System.

A CIS must be committed to the development of a systematic information updating design. Locating sources and obtaining data are key elements. The strategy of relying on existing data resources seems to be supported by several advantages, although the costs and time required to negotiate and implement such agreements are easy to under-estimate. Major efforts have been put forth to establish working relationships with numerous organizations.

Relatively unprocessed data sources can also be used by CIS. Telephone contacts with persons knowledgeable about the occupation, newspaper "Help Wanted" sections and the "Job Bank Openings Summary" are principal sources. Generally these sources prove to be inexpensive and helpful.

The occupational descriptions are the heart of the career information delivery system and pose the greatest demands for information. Greatest needs are for up-to-date information on current employment, wages, occupational supply, hiring requirements, and training sources to be used in several System components such as the descriptions, Education File, Attribute File, and cassette interviews.

The CIS carries on continuous updating of information as new data become available as well as conducting periodic reviews of all System components and information content. Several research instruments have been developed to assist these processes. The periodic review is not an attempt to examine all System aspects but to accomplish predetermined objectives. Materials are submitted to review panels for validation. While there is general satisfaction with this design for information maintenance, experimentation is always useful. The periodic review process is also utilized to increase

integration and consistency between System components.

Two principal methods of evaluating the content of CIS information are utilized: (1) analysis of user comments; (2) comparison with model information systems or statements of need. Comments of users became available when coordinators in the schools were asked to respond to questions about the System. Comments indicated that users were confident about the accuracy of the information and suggestions for improvement generally called for more audio-visual material.

Extensive field testing of the occupational information system has established the overall attractiveness and effectiveness of the System for a wide range of different kinds of clients in different school and agency settings. Evaluation of individual components and both computer and manual versions of the System has shown that the QUEST questionnaire and list and the occupational descriptions are the backbone of the System. The attractiveness of the teletype terminal, a feature of the computerized version, has no parallel in the occupational needle-sort version, yet both versions have been found to be effective. The other information components, namely, the Bibliography and Books, the occupational interview cassettes, the VISIT file, and the educational file, are used much less, yet a significant proportion of users rate each of these components as most helpful or most valuable. Further evaluation of some of these components is needed, and continued development and modification of the CIS information delivery system and system components is essential.

User satisfaction with the quantity, quality and format of the information received is consistently high, indicating that the flow of information between data producers and decision makers can be completed. Users not only report getting accurate, relevant occupational information, but also indirectly learn about the occupational exploration and career decision-making process. The delivery systems installed in schools have continued to receive high volume usage over time but have had only a moderate effect on instructional programs.

High school teachers and counselors have been impressed with the high rate of use and high degree of involvement by students with this approach to occupational information delivery. Testing in Employment Division offices in Portland demonstrated a consistent attractiveness for ES clients. It seems to be ineffective only for persons with little or no reading skill. Continuing pilot use with special clients groups such as NYC enrollees, WIN program participants, ADC mothers and elderly persons seeking part-time work, further confirms System application and effectiveness with diverse kinds of users.

While these pilot tests are not conclusive, results help delineate and specify effects of different settings or conditions on System use outcomes. As CIS expressly moves toward working with social agencies, continuing experimentation contributes further elaboration and detail to the firm base of full scale evaluative data, thus expanding CIS ability to effectively adapt the System to varying agency conditions and needs.

A complementary impact has been created through provision of occupational and labor market information to program planners. The Manpower Information Clearinghouse, the Career Information System's special effort to assist planners, has established contact with a large number of data-producing agencies, whose information is used by all portions of CIS. (A complete report on Manpower Information Clearinghouse appears in a companion report.)

A major goal of CIS has been development of the System in such a way that it can be sustained in the long run by the institutions it serves. During its implementation, development costs have been high and continuing experimentation with ways of achieving efficiency in production have not yet produced full economies of scale. In its first four years the System's use has doubled annually from 15,000 to 140,000. The CIS Board has established a pricing schedule for user institutional support to CIS which include both the operating costs of the delivery system and the costs of research, in-service training, management and materials.

The model outlined above and described in the following chapters, when analyzed in context of other efforts to develop and deliver career information, makes it prudent to begin implementing such systems elsewhere. Workable strategies exist for accomplishing the major functions of a career information system -- information development capitalizing on the work of numerous data-producing agencies, information delivery by computer and manual methods, effective implementation with reasonable in-service training, and finally, appropriate financial and organizational structures.

Comments on Further Research

While successful techniques have been demonstrated in these areas by this and other projects and much has been learned in the process, much still remains to be learned.

Effect of the delivery system. Students of all ages as well as adults have demonstrated that the widely recognized need for better labor market and educational information can be served with a high degree of user satisfaction

by such delivery systems as CIS employs. The effects of the delivery system are obviously substantial, and some of these effects have been partially documented, but much more research needs to be done to isolate the crucial elements in successful systems and to identify outcomes with special groups. Of high priority are further measurement of comprehension, knowledge gain, and effect on career development behavior (e.g., further information search, change and/or confirmation of choices and plans, change in "vocational maturity," etc.). Comparisons among existing delivery systems, with various types of information (e.g., national as opposed to local), would be illuminating and could help prevent our capacity to deliver from outrunning our commitment to quality of content. Unfortunately, many of the analytical tools designed for use in other environments do not work here, as is demonstrated by the gross inapplicability of readability formulas to occupational information delivered in this way. Thus, there needs to be additional development as well as application of such analytical tools.

New Clientele. Career development is a long-term process. The teenage years are in many ways the most critical, but there are dramatic unmet needs among adults, as documented by the CIS experiences in shopping centers. While the demand has been overwhelming, it is still relatively undifferentiated. We know little about the best use of the system for adults in various situations, e.g., female re-entrants to the labor force, mid-career changes, and those nearing retirement.

Similarly, experimentation in other settings is needed. There is a growing recognition that career awareness opportunities are needed for elementary school students, and the needs of many social agency clientele, including the Employment Service, are not being met. Serious study should also be given to facilitating the career planning that takes place outside of schools and social agencies, i.e., in families, youth groups, and the other situations that typically rank higher than schools as influences on career choice.

Data Sources and Their Use. A somewhat different kind of need is apparent in the CIS staff work on information development. The basic strategy of utilizing existing sources maximally has required the development of data source lists and methods of interpretation that yield career planning information from data originally developed for other purposes without doing injustice to those data. Three things are needed. Successful methodologies need to be documented further than is done in this report so that they can be replicated elsewhere. Staff development capabilities need to be initiated because there is no satisfactory labor pool for these positions. Finally, if career planning information is to become a major use of labor market and educational data, it would be efficient for CIS organizations to more actively influence the development of data. This can take place both by encouraging established data systems to shape the form and content of their data to serve CIS

needs as well as program planning and administrative needs and to undertake occasional original research to fill data gaps. Perhaps the greatest current need of the latter type is the data for use in writing statements about methods of occupational preparation (see discussion of Preparation File, pages 118-120).

Finance and Organizational Structure. A Career Information System requires a structure that bridges the traditional gap between manpower research and education, one that provides sufficient financial resources, and one that provides accountability to users. Oregon has had success with the consortium and user fee approach, but no organizational strategy is without problems and this is not the place for dogmatism. The financial and organizational structure in Oregon and in other occupational information system states should be monitored to discover how this basic strategy can be beneficially modified to serve other situations and to determine what alternatives may be effective.

Multi-disciplinary Questions and Follow-up. A final comment about evaluation is in order. Development of a Career Information System is an undertaking that draws upon several disciplines and is of interest to many more. Economics, counseling, public administration, and computer science are all obviously involved, as are people concerned with labor statistics, educational statistics, sociology, journalism, education administration, career education, women, and public finance. The list includes any discipline or organization with an interest in careers, information, or systems. Each can contribute if one had time to seek out and utilize the contribution, but there is another point that is more sobering for a discussion of research and evaluation. Each has its own "obvious and fundamental," but also distinct questions on which to judge such an enterprise. The labor statistician's first questions "What are your data sources and how do you forecast outlook?" reflect the preoccupations of that field. The person evaluating the system from a counseling perspective will ask instead about the process for nominating occupations and student response to the delivery system. The psychologist wants data based on a rigorous experimental design, while the economist wonders about the labor market effects. Each question is legitimate, difficult to answer unequivocally, and fundamental from some point of view.

These multi-disciplinary questions will continue to be asked, and research must continue to progress on several fronts. The short-term evaluations that have accompanied this and other system developments have begun to answer many of the fundamental questions, but many cannot be answered with instantaneous evaluation. Work should begin on a longer-term follow-up study that would be designed to produce results germane to many of the questions concerning the outcome of career information system use.

Chapter II

INTRODUCTION

BACKGROUND

The concept of an occupational information system that could effectively serve students and clients in a variety of Oregon settings was favored by several people in the state long before the Career Information System was actually begun. As early as 1960, Franklin Zeran from Oregon State University discussed the need for coordinated management of information between the various agencies in the state directly concerned with the production and dissemination of occupational information. However, it was not until representatives from the Oregon Employment Division, the Oregon Department of Education, Oregon State University, the University of Oregon, and the Lane Intermediate Education District began to explore responses to this need in the Fall of 1969 that something concrete took place. Their first formal meeting was an outgrowth of a demonstration by the 3M Corporation of VIEW, a microfilm format for storage of occupational information. Ironically, the VIEW system was not the delivery vehicle ultimately endorsed by this group; however, the demonstration did stimulate discussion of practical delivery devices and led to the establishment of a group with a common commitment.[1]

---

[1]Early planners of the Oregon Career Information System included:

Dr. Cas Heilman, then Professor of Career Education at Oregon State University;

Dr. Kenneth Hills, then Director of Student Services at the Oregon Board of Education;

Mr. Paul Kerr, State Supervisor of Technical Development and Analysis in the Oregon Employment Service;

Mr. William Manley, Director of Career Education for the Lane Intermediate Education District;

Dr. Bruce McKinlay, Research Associate in the Bureau of Governmental Research at the University of Oregon;

Mr. Thomas Williams, Career Education Specialist at the Oregon Board of Education; and

Dr. Franklin Zeran, then Professor and former Dean in the School of Education at Oregon State University.

As the group continued to meet regularly during the next several months, it became apparent that strong cooperating relationships among agencies and a competent staff would be needed if such a statewide program was to be successful. Their discussions led to a thorough review of the components and feasibility of a career information system including such elements as information development, delivery devices, in-service training, location, staffing and resources for funding.

As this nucleus of people from various state agencies continued their discussions, they recognized that governmental agencies, associations, and private firms produce a great deal of useful information, but the best of it is rarely prepared for use by students, counselees, and job seekers. A most serious obstacle in the use of such information is the lack of effective data gathering and information dissemination systems.

Significant Institutions

Schools are ports of entry to career success or career failure, yet seldom is there a school with a clearly defined career guidance program effectively meeting student needs. More often the development of the career guidance program has been delegated to a counselor who has neither the time nor the individual expertise to bring about an effective program; or career guidance is thought of by the school's staff and administration as the "Career Day" held once a year. Too often students' understandings of careers, as well as their choices and pursuits of careers, are left to chance. Rare indeed is the school where the administration, counselors, teachers and parents work together to discover the career needs and decision-making competencies of their students and bring this knowledge to bear upon their own functional relationships with them.

Social agencies and their counselors face similar problems in assembling and using relevant career information. Counselors' limited time and training in this area often result in inadequate occupational information systems. This is a particular problem because of the great diversity of client information needs which include the wide range of occupations, the depth of information regarding each occupation, and the readiness of the client for the information. Some system for bringing together the disjointed pieces of information was sorely needed.

The integration of appropriate systems of dissemination with an agency's or school's planned career guidance approach was seen as vital. Too often, cabinet files of career briefs, shelved copies of the Occupational Outlook Handbook, or storerooms of career films and tapes await discovery by only

the ambitious.

Emerging Resources

The need for occupational information had spurred the Oregon Employment Division to undertake an extensive program of area skill surveys in the early and mid-1960's, some of which contained substantial advances in both research methodology and delivery format. Experience with those studies led to an appreciation of the value of the information to people engaged in career and education planning, but their tabular format and incomplete occupational supply information were serious shortcomings.

In 1967 the Oregon Employment Division planned the first updating of an area skill survey, the 1967 Lane County Labor Skill Survey. That study was significant for two other reasons as well. The format was drastically revised so that it contained a collection of nearly 200 occupational briefs written in a non-technical style. And, the study contained a variety of localized data including for the first time complete information on occupational supply as well as demand. The supply information was developed following a methodology entitled Forecasting Occupational Supply, developed under a Manpower Administration contract.[2]

The 1967 Lane County Labor Skill Survey was published in the early months of 1969. It was well received by counselors and program planners in the schools and social agencies during the months following its release, but it did not receive the sustained attention that its innovative and carefully prepared format deserved. This time, though, the problems limiting its use were different. Waiting until all the occupational briefs were written before publishing them together in one volume resulted in a fairly long time span between data collection and publication. Some users concluded that the information was out of date by the time they received it. While this was certainly an over-reaction, since only a few information items have such a short useful life, it was understandable.

Additionally, the use of occupational information in career planning was impeded by the absence of any mechanism to help the average user identify occupations to examine. Without a device that would permit a person to use available information about interests, abilities, preferences and needs, users

---

[2]Bruce McKinlay and Lowell E. Johnson, Forecasting Occupational Supply: A Methodological Handbook, Technical Report Number 4, Manpower Research Project, State of Oregon Employment Division, February 1969.

would continue to be guided by status considerations, race, family background, and other limiting associations.

It was apparent that a delivery system capable of handling new information as it becomes available and meeting the other needs of individuals was needed. The delivery system itself should be attractive to users. The information format should be oriented to career planners, readable, and not highly technical. Analysis of an occupation should be thorough, including both demand and supply considerations. The delivery system should be capable of frequent updating. Finally, some method should be included to assist users in selecting occupations for exploration.

One of the important resources at the group's disposal was a project of the U.S. Employment Service, the Oregon Employment Division, and the University of Oregon involving work on an innovative information delivery system entitled Occupational Information Access System (OIAS). The OIAS project was funded by the U.S. Labor Department in September 1969 to design and field test a model labor market information delivery system.

At the same time the Department of Education and several local school systems within the state were developing strong career education programs. This movement included the recognition of awareness, exploration, and preparation as significant steps in career development. The State Department of Education took a leading role in the formulation of career clusters based on labor market demand, and those clusters serve as the basis for much of the career education in secondary schools. Experience soon demonstrated what leaders in career education had been saying, namely that career education involves decision making as well as skill training. Guidance, decision-making skills, and information are essential too.

Also existing was a community college system with a major emphasis in occupational preparation and a growing tendency toward joint planning and allocation of specialty programs.

Thus, there was an appropriate and receptive environment in Oregon educational institutions for the implementation of a career information system. At the same time components of practical delivery systems were available to serve schools and social agencies where the use of such information is critical for student and client decision making. What was needed was organizational effort to implement these systems and staff to insure that accurate and timely information was disseminated. Each member of the planning group realized that the time was right for Oregon to make its move in this direction. Yet no single organization had the expertise or financial resources to handle the job alone. Each person on the planning group felt that he could obtain the commitment from his particular agency or organization to support a joint system for

delivering occupational information.

By the spring of 1970 the group was determined to develop a proposal that clearly outlined the goals for establishing a Career Information System for the state. They proposed that the Career Information System should be a model inter-agency consortium which would provide practical means of direct access to current career and labor market information; such information should be presented in forms which are meaningful to individual students and clients and integrated into schools and social agencies in the state.

Specific Information Needs

A review of the literature related to career decision making reveals the importance which prominent theoreticians place on current career information. Ginzberg pointed to the complexity of occupational decisions by stating:

> "If he (the client) could base his choice on but one element, such as his interest or capacities, without regard for the job market, the income structure, and the social prestige which attaches to different kinds of work, his choice would be simple and direct. However, a series of factors both internal and external affect his decision."[3]

It is a recognized fact that the characteristics of the labor market is an important external factor in career choice. When the individual needs information about the labor market and he is unable to get that information himself, (or is not aware of his need for it), it is the counselor's responsibility to direct him to the exact information he requires. Peters and Hansen forthrightly state that, "Vocational guidance is implemented through the use of appropriate occupational information."[4]

Donald Super, one of the most highly regarded of the career development theorists, lists "possession of information concerning the preferred occupations"

---

[3]Eli Ginzberg, "The Theory of Occupational Choice," The Development of Human Resources, (New York: McGraw-Hill, 1966) p. 47.

[4]Herman J. Peters and James C. Hansen, ed., Vocational Guidance and Career Development, (New York: MacMillan Co., 1966) p. 173.

as a necessary part of the vocational developmental tasks of crystallization and specification.[5] He also identified information and planning about the preferred occupation as essential dimensions of vocational maturity.[6]

Leona Tyler notes that occupational information serves at least two major purposes--occupational exploration and occupational selection. Tyler suggests films, field observations, and conversations with workers for a client engaged in occupational exploration. The exploratory use of occupational information, then, could be termed a "search for promising alternative courses of action."[7]

During the stage in which specification occurs, the ruling out of certain alternatives, the client needs information which is both more comprehensive and more specific. The task of the individual at this stage is to vividly sense the life style he will be choosing if he selects a particular occupation; thus, his questions are more specific: "What are the prospects for placement once he gets out of school? Where would he be likely to live? How big is the income level? What are his chances for advancement?"[8]

The benfits of occupational information accrue to both the individual and society.

> "In an economic system in which individuals are free to choose among occupations and specific jobs, effective allocation of human resources depends upon workers and potential workers having accurate labor market information. The market's measure of the relative social importance of different occupations and different jobs is reflected in differentials in economic rewards. These differentials, given variations in workers' preferences for different types of work, are presumed to attract individuals into those occupations and jobs where their contribution to the

---

[5]Samual H. Osipow, "Super's Developmental Self-Concept Theory of Vocational Behavior," Theories of Career Development, (New York: Appleton-Century-Crofts, 1968) pp. 124-125.

[6]Ibid., p. 129.

[7]Leona Tyler, The Work of the Counselor, (New York: Appleton-Century-Crofts, 1969) p. 119

[8]Ibid., p. 120.

social product will be at a maximum. But this can occur only if workers have a reasonably good knowledge of the range of alternatives for which they might potentially qualify and of the rewards (and costs) attached to each. Accurate and complete labor market information is no less important from the standpoint of the individual. Whatever his particular employment goals, the probability of achieving them is enhanced by full knowledge of the existence and characteristics of alternative opportunities."[9]

Delivery of Labor Market Information to Clients

JoAnn Harris has commented that it is often a problem to get persons in the exploratory stage to read occupational information.[10] The information appropriate to the process of exploration is general in nature, and is designed to stimulate further interest by opening new options for exploration.

With the current emphasis on career preparation in school curricula, it is imperative that provision be made for ample opportunities for students to explore the technical requirements, working conditions, and political and social responsibilities of each of the career families open to them. The "career cluster" curriculum must be tied to practical sources where students can acquire accurate and current information to assist them in their exploration. In addition, the rapidly growing career exploration courses now being introduced on many college campuses have a common element, information.

Many agencies have their particular type of application to serve their clients. The employment security and the vocational rehabilitation agencies have continuing programs and major responsibilities which could be served by a CIS. Many manpower programs would also benefit from ready access to reliable occupational information.

Career information that is current and accessible is the vital product that can be offered by a service agency such as the Career Information System. An equally important element to be offered by the CIS is assistance to a school or agency in integrating information into a career guidance approach which is consistent with the needs of their students and clients. Conceivably every

---

[9]Herbert S. Parnes and Andrew I. Kohen, Occupational Information and Labor Market Status: The Case of Young Men, Center for Human Resource Research, Ohio State University, Columbus, Ohio, 1973.

[10]JoAnn Harris, "The Computerization of Vocational Information," Vocational Guidance Quarterly, September 1968, p. 12.

school and college in the state would be a potential user of CIS services.

Objectives of the Project

In formulating a proposal to serve students and clients through established agencies, the Career Information System planning committee defined the following objectives to be achieved in its implementation project:

1) Finance the formation of an inter-agency Career Information System for the collection, packaging, and dissemination of career information.

2) Develop information in an array of media and formats reflecting differing needs of individuals and resources of agencies.

3) Manage various information access systems.

4) Provide systems engineering services to schools and social agencies such as the Employment Division, Vocational Rehabilitation, and Public Welfare throughout the state. Such services would help individual schools and agencies select appropriate information and delivery components for a functioning system.

5) Provide consultant services to help individual school and agency staff members integrate occupational information into on-going instructional, planning and counseling functions.

6) Provide pre-service and in-service training opportunities for present and potential school and agency staff.

7) Field test organizational and financial arrangements of the CIS program prior to expansion throughout the state.

8) Evaluate the efficiency of the CIS operations and the effective disseminated information in improving student and client career decisions.

Throughout the planning stage it was recognized that new and attractive delivery vehicles would be used, but that valid information content was to be the real heart of the system, and effective implementation was essential.

Expected Coverage

In a state with the population of Oregon, widespread usage in both educational and social service agencies is required for a high quality service to be financially feasible. Thus the Oregon CIS was designed with the capability of collecting and disseminating career information throughout the state. Such coverage

presented a number of questions: (1) how can the labor market information be regionalized within the state? (2) what formats for the occupational information will be appropriate for the various student and client clientele? (3) what types of delivery systems will be needed to serve the entire state? (4) how can the sparsely populated areas of the state be serviced economically? These and other questions were on the minds of the people who were seeing the CIS develop as a statewide organization.

School population to be reached. A CIS can fulfill a basic function in the career development of students moving through school systems by supplying them with current occupational information for personal decision-making. Career development theorists have written about this basic function, school counselors have talked about it, and the public is now asking for this kind of service. Each would agree that most students go through an exploratory stage of development in which career choices are tentative. Through this period (junior high school to post high school for many), the information appropriate to this process of exploration is general in nature, and should be designed to stimulate interest by opening new options for further explorations.

These facts suggest that the school population that could benefit from the CIS would include junior and senior high schools as well as a number of post-high school institutions (community colleges, public and private four-year institutions, and private vocational and technical schools). It was thought that a multi-media approach would provide sufficient flexibility to satisfy a significant range of differing information needs. During its implementation stage, Oregon's CIS has become used by a majority of junior and senior high schools and community colleges. Usage in four-year colleges and private vocational schools has been low. (A complete discussion of usage appears in Chapter V.)

Social agency population to be reached. Social agencies have their particular types of applications for occupational information, but many would be potential users of the CIS service. A number of social service projects, not all of which have employment as a major goal, find career information of the type available through CIS highly useful. Larger state agencies such as the Employment Division and the Vocational Rehabilitation Division have continuing programs and major responsibilities that could utilize stimulating career information with their clients. It would be a goal of CIS to explore these needs with the agencies involved and to discover thereby what assistance CIS could provide. If cooperating relationships could be established with the major social agencies in the state, it is highly probable that many thousands of their clients could be supplied inexpensively and adequately with current occupational information for their career decision making.

With a few notable exceptions among private agencies, social agencies have been much slower than schools to use the Career Information System. Anticipating this caution among large state agencies as well as possible special information needs by their clients, CIS deferred intensive work with those agencies until the third year when substantial implementation had been achieved in schools. By the end of that third year, commitments were made for utilization of CIS in all Vocational Rehabilitation Offices and all state Correctional Institutions in the state. The State Employment Division, while cooperative in supplying labor market data, is still studying the possible use of CIS occupational information files.

Need For Agency Support of CIS Goals

Despite the obvious needs of their clientele, there remains a question whether organizations will support such a program as CIS. In Oregon support for the concept and goals of a statewide service to supply occupational information came from local schools, state agencies, and particularly the members of the planning committee who represented state and local agencies. Reasons for preferring an inter-agency effort are numerous. To begin with, much of the data on which career planning information must be based comes from existing agencies, though not from any single agency. Many produce various kinds of data, and all must be involved in one way or another in making their data available. At the other end of the continuum, existing agencies, both state and local, have the established service delivery systems through which career information should flow if it is to be of maximum usefulness to individuals. Thus, population serving agencies are an essential link and should be part of the career information delivery system. (Many of these same organizations also have career education or manpower program responsibilities which can themselves benefit from readily available occupational information.) Finally, there is the practical fact that no single agency has the skill or financial resources to provide this comprehensive service unilaterally. An effective system, therefore, requires the information sources, access to clients, expertise, and financial backing of a variety of education and social service institutions.

There was full awareness among the planning group members that such an undertaking would require an uncommon degree of cooperation. It would, in fact, require large and state bureaucracies to lay aside some traditional defenses and share from their talent and resources.

Letters of endorsement for the CIS concept and proposal were received by the committee from key state agencies and from the county and local levels. Each pledged the support of his organization for the concept and endorsed its goals.

Ross Morgan, Employment Division Administrator, said,

"There is no doubt in my mind but that much more must be done to develop, disseminate, and utilize occupational information for Oregon's students and workers. The proposed CIS could prove to become an effective means for achieving such a goal. Those of you who are involved in the development of a CIS can be assured that the Employment Division will energetically cooperate. We look forward to discussing specific areas in which we may participate."

The Employment Division's Deputy Administrator, Eldon Cone, added,

"We are pleased to have this opportunity to be working through the Provisional Board of Directors of the Career Information System, with the Oregon Board of Education, Oregon State University, the University of Oregon, and the Lane County Intermediate Education District. You may be assured, then, of our complete cooperation in the achievement of the CIS goals."

Speaking for the Oregon Board of Education, Jesse Fasold, the Deputy Superintendent, made the following commitments,

"We are extremely pleased with the concept demonstrated by this committee in the overall planning of this proposal bringing together a consortia of the various educational institutions, an intermediate education district office, the Employment Office, and our own opportunity as the Oregon Board of Education to cooperate in this endeavor. You have our full support in this program..."

At the University of Oregon, Dean Norman Sundberg of the School of Community Service and Public Affairs said,

"The Career Information Service proposal which your group has developed is a good one. We recognize the need for such a service because we have been faced repeatedly with the need for better career information and better information dissemination methods in the development of the Wallace School of Community Service and Public Affairs and in other activities of the University. We heartily endorse the objective of the CIS and the concept of a coordinated, inter-institutional effort."

The support of local school districts is reported by William Jones, Superintendent of the Lane Intermediate Education District.

"The Lane County Superintendents' Advisory Committee on Career Education received the proposal of the Career Information System at

their February 3, 1971 monthly meeting. After considerable discussion about the concept of a statewide career information dissemination network, it was unanimously agreed to endorse the project.

Furthermore, upon recommendation by the Superintendents' Advisory Committee, the Lane County superintendents as a whole endorsed the project as having significant implications in providing meaningful career information to students in Lane County as well as the state."

Despite all good intentions, the successful implementation of cooperative arrangements is probably the exception rather than the rule, requiring, as it does, both effort and flexibility at many organizational levels. The Career Information System's first steps toward cooperation did not always go smoothly, but the demonstrable benefit to the clients, together with the representative structure of the CIS Board, have kept this consortium structure of CIS very much alive.

ORGANIZATIONAL STRUCTURE AND FUNCTION

Evolution of CIS Board of Directors

As previously described, the original group who met to discuss the merits and feasibility of the CIS concept and who were to later form the nucleus of the CIS Board of Directors, were all representatives from state and local agencies. Collectively, their backgrounds represented knowledge and experience in the collection and analysis of career and labor market information, the development of delivery systems for occupational information, curriculum development, and the integration of career information in the decision-making process. Each saw the need to help develop effective career guidance programs as well as to develop dynamic systems for compiling and disseminating career information. Their efforts were unified around the principle of helping people obtain information for use in career planning. While recognizing the complementarity with manpower and career education planning, the group also recognized the important differences. Their enthusiasm for the CIS concept was due in large part to the potential benefit they saw, and their continued commitment has been maintained by the quality of the service, its demonstrated success in reaching large numbers of students, and the opportunity for innovation.

This planning group continued to meet as a statewide committee representing the Oregon Board of Education, Oregon Employment Division, Oregon State University, University of Oregon, Lane Intermediate Education District, and secondary schools during the formulation and negotiation of a proposal for

a continuing career information system for the state, which would package and disseminate occupational information through effective information systems such as the Occupational Information Access System and would facilitate the integration of such information into continuing counseling and instructional programs.

That proposal, submitted by the Oregon Employment Division to the U.S. Department of Labor, Manpower Administration in early February of 1971, outlined the formulation of a formal Board of Directors representing a broad base of contact throughout the state of Oregon. Most of the personnel named to the Board were members of the original planning committee.

Initial funding for the CIS was provided during the third quarter of 1971 by the Manpower Administrator's Office of Research and Development and the U.S. Employment Service. The Board met for the first time as a formal decision-making body during that quarter to select a Director of the Project, formulate a constitution, and elect a chairman of the Board. Since that time, chairmanship of the Board has changed annually and there have been several changes in Board membership.

The Board has developed and formalized a number of policy statements that assist the Director and CIS staff in daily management. Policies formalized by the Board cover such topics as pricing schedules, consortium membership, Director's authority to expend funds, establishment of user agencies and standards for occupational information delivery system usage.

Structure and Function of CIS Board

Establishment of a formal consortium rather than simply an advisory committee has several advantages: it represents,in a significant policy making way, the expertise and interests of the diverse interests; it requires a more substantial commitment from members; it prevents domination of the CIS by any one agency; it helps keep the staff responsible to the needs of its clientele.

The Oregon CIS operates under a constitution that not only established its goals and objectives but set up the consortium's organization structure and working relationships. Membership in the consortium is by formal invitation and is extended to representatives from secondary and higher educational institutions, social service agencies, CIS user agencies, or other persons designated by the Board as appropriate. Policies are established for the selection, nomination, election, and tenure of Board members. Provisions are outlined for the election and terms for Board officers. The formal relationships between the Board and the CIS staff are clearly established. (See Appendix A for a copy of the CIS Constitution.)

In addition to a policy Board, ad hoc committees can effectively serve the organizational and functional needs of the CIS. For example, an ad hoc committee drafted a working model of the constitution itself. A selected sub-committee of the Board met several times to write a constitution and enlisted consulting assistance on organizational structure from a University of Oregon professor who had particular expertise in this area. The results of the sub-committee work was largely accepted by the Board and ratified as their constitution.

Another important ad hoc committee drafted a set of standards for use of the computerized system; those standards were subsequently approved by the Board. (For a copy of the standards, see Appendix C.)

With regard to Board membership, the planning group decided early to give highest priority to obtaining people of demonstrated ability and commitment to the goals of CIS rather than seek people at high organizational levels who might have authority but would also have competing commitments.

One of the features of the Board that transcends its specific purposes is the forum it provides for interaction among independent and sometimes antagonistic agencies. This can be one of the strengths of the consortium, but it can be its undoing if understanding and cooperation do not develop. The development of such relationships requires effort, commitment to something besides protecting ones own bureaucracy, and time. Besides different traditions, some philosophical differences run deep. For example the primary emphasis of public schools is nearly always an exploratory approach to careers, while the Employment Service emphasizes immediate decision-making capabilities. Such differences can manifest themselves in disagreement on many matters of Board policy. In Oregon's case, these differences have been persistent but manageable.

The trend during the three years has been to increase the representation of people who use CIS on a day-to-day basis, to broaden the geographic and institutional representation, and, in the case of the state agencies, to draw members from higher organizational levels. For example, two practicing counselors, one from a central city high school and one from an ADC Association Clinic, now serve on the Board. Similarly, the public colleges are now primarily represented by the High School Relations Director in the Chancellor's office of the State System of Higher Education rather than by four professors from two institutions.

These trends reflect the business of the Board. The majority of that business deals with policy decisions concerning the operation and development of

CIS; much of the rest deals with the organizational politics of independence and support for the system. One of the most difficult adjustments has been for large agencies to relax some of their unilateral control in favor of shared authority and responsibility with other competent institutions. The Board acts as a sounding board in receiving reports of CIS activities, suggesting means of approaching administrative tasks such as seeking funds, improving relationships with users, etc. Despite their administrative functions, the most effective Board members are those who care most about service to people.

As new members join the Board, steps must be taken to orient them to the program and to Board responsibilities and procedures. This is done by providing a Board member handbook with appropriate contents, scheduling meetings on a regular basis, and paying for meals so that no member has to choose to participate or not on the basis of cost to the individual. For the most part, the Board has concentrated on insuring the quality and widespread use of CIS services and has not as a group concerned itself with related programs, policy debates, or legislative issues.

There are substantial benefits from a consortium effort, and substantial costs as well. These benefits are mostly in the area of understanding and support for the system and the general coordination that is fostered by such an interagency effort. The development of information and delivery of services have proven to be staff activities in which consortium members play supporting roles.

To be effective, a consortium requires substantial expenditure of effort, accomodation, and time by both Board members and staff. While the consortium is no panacea to organizational problems, there are no apparent alternatives for meeting the needs of CIS as well.

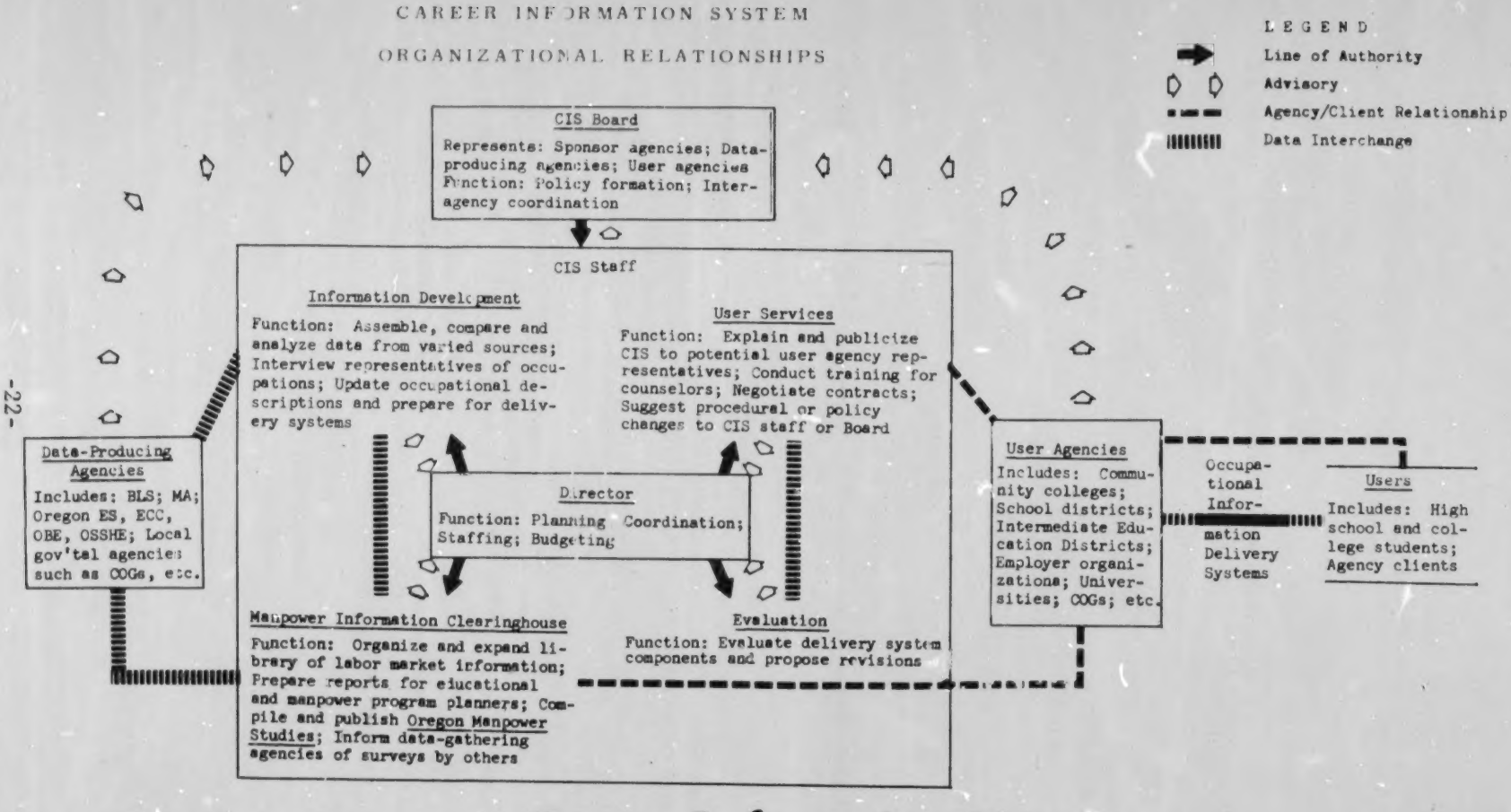
Structure and Functions of CIS Staff

A cooperative CIS effort makes maximum use of existing resources; nevertheless it absolutely requires a stable and competent staff to compile labor market data and to facilitate the integration of career information into agency and school counseling and instructional programs. Cooperative efforts require just as much management, if not more, than totally self-contained organizations.

CIS requires a director, selected by the CIS Board, to supervise the operations, provide leadership to the organization's activity, and serve as Board liaison. Under his direction, staff are selected to work directly in information collection and development, in consultation with schools and agencies, and in system management. The following chart of organization relationships should clarify the organizational structure and staff functions of the Oregon CIS.

CAREER INFORMATION SYSTEM

ORGANIZATIONAL RELATIONSHIPS


LEGEND
Line of Authority
Advisory
Agency/Client Relationship
Data Interchange
CIS Board
Represents: Sponsor agencies; Data-producing agencies; User agencies
Function: Policy formation; Inter-agency coordination
CIS Staff
Information Development
Function: Assemble, compare and analyze data from varied sources; Interview representatives of occupations; Update occupational descriptions and prepare for delivery systems
User Services
Function: Explain and publicize CIS to potential user agency representatives; Conduct training for counselors; Negotiate contracts; Suggest procedural or policy changes to CIS staff or Board
Director
Function: Planning Coordination; Staffing; Budgeting
Data-Producing Agencies
Includes: BLS; MA; Oregon ES, ECC, OBE, OSSHE; Local gov'tal agencies such as COGs, etc.
Manpower Information Clearinghouse
Function: Organize and expand library of labor market information; Prepare reports for educational and manpower program planners; Compile and publish Oregon Manpower Studies; Inform data-gathering agencies of surveys by others
Evaluation
Function: Evaluate delivery system components and propose revisions
User Agencies
Includes: Community colleges; School districts; Intermediate Education Districts; Employer organizations; Universities; COGs; etc.
Occupational Information Delivery Systems
Users
Includes: High school and college students; Agency clients
Career Information Flow

(One limitation of a graphic representation such as this is the disproportionate sizes of the various blocks. CIS staff totals about a dozen full-time equivalent positions, including secretarial and administrative staff and part-time research assistants. Thus, despite its size on the chart, it is really very small in relation to the sizes of data-producing agencies or user agencies.)

From the chart it is clear that definite provisions have been made for feedback from users. The functions within the CIS organization are clear and distinct, yet roles are flexible. Exchange of information between CIS and data-producing agencies can freely move both ways. The Board also receives feedback from both data-producing and user agencies as well as from the CIS staff.

One of the crucial decisions to be made by the Board is the location of the staff. It should be housed in an institution with a statewide service area, with a reputation for objective and impartial research, with a broad range of support services (including the capacity to receive and spend contract service fees), and that is willing to permit the Board major policy authority.

The Oregon CIS Board chose to locate its staff at the University of Oregon and within the new School of Community Service and Public Affairs. The University acts as fiscal agent for CIS, receiving funds from federal and state agencies and from local school districts for support of the System. CIS professional staff have faculty status within the University's personnel system. Thus, the University is legally accountable for delivery of promised services, and CIS operates within the laws and administrative rules governing the University. However, direction of research and service institutes is decentralized, and the University is willing that the staff accept CIS policy direction from the Board.

One of the substantial benefits of the staff's location at the University of Oregon is that essential legal and accounting services are provided by people who are accustomed to handling a wide variety of research and service activities under diverse financial arrangements. Also there is ready access to other administrative and technical services including audio-visual, printing, computer, library, statewide telephone services, and management services. CIS has benefited from available consultation on organization structure, marketing strategies, and research methods as well as the pool of talented student help.

The ready access to these resources has permitted the CIS staff to concentrate their attention on matters within their own areas of expertise and has kept managerial staff size smaller than it might otherwise have become.

ARRANGEMENTS WITH DATA PRODUCING AGENCIES

An important test of the Career Information System is its ability to fill its delivery system with current, valid, and useful information, but it does not

necessarily follow that CIS should establish a large data gathering capability. Indeed, the CIS was conceived in part out of recognition that a great deal of existing information goes unutilized because of the absence of effective systems for collecting and delivering such information. One thing that is needed is a thorough and reliable system for obtaining the data output of other organizations.

As a result the Career Information System operates on the principle that it will make maximum use of existing data resources before initiating the collection of new data. In Oregon, major efforts have been undertaken to establish working relationships with the Oregon Employment Division, the U.S. Employment Service, the U.S. Bureau of Labor Statistics, as well as other organizations, and considerable communication and exchange of information has taken place. The strategy of relying on existing resources still seems to have several advantages, although the costs and time required to implement such working relationships are easily underestimated. This difficulty only serves to illustrate the need for an organization like CIS. Pertinent data sources are identified only from extensive experience, and those data flow to users only with continued effort from those users, whether they be job seekers or manpower information specialists. Job seekers and students rarely have that experience or time to expend on data collection.

There are several types of relations that can be established with data-producing agencies, and some that cannot.

Subscriptions and Mailing Lists

There are numerous periodicals ranging from the Monthly Labor Review to Guidepost published by the American Personnel and Guidance Association that are of value to a CIS staff. Many federal government produced documents are unavailable except through direct purchase and a large number must be identified from periodic bibliographies and acquired in this manner each year.

Typically, placement on a mailing list is effective for receiving the standard publications, newsletters, and information releases of agencies with already established mailing lists. This arrangement has been made with the Employment Security agencies in the region, the Oregon Department of Education, U.S. Manpower Administration, the Bureau of Labor Statistics, the Oregon Educational Coordinating Council, and various regulatory agencies, professional associations, and training institutions. Another result of being on mailing lists is regular receipt of news releases from a wide variety of federal and state agencies, some of which have considerable value but many of which do not. Far more important are the regular reports such as the Job Bank Openings Summary (JBOS), the

newsletters and monthly reports from commercial banks, District Federal Reserve Banks, and regional telephone companies, and the various statistical series of the State Employment Division and similar agencies. The numerous mailing lists also help provide notification of new publications which may be pertinent. Less frequently, a CIS may find it helpful to be placed on mailing lists for information not normally released to the public such as employee newsletters and position descriptions from the state personnel division.

Notification of New Research

The CIS staff also undertook a somewhat more innovative attempt to obtain advance notice of new research. Under this arrangement, a designated representative of the data-producing agency could notify CIS of the content of new research. The designated representative would also be available to answer questions that arise and act as liaison between organizations. Such arrangements have been established with a number of state agencies and with the Occupational Outlook Section of the Bureau of Labor Statistics. However, they do not continue automatically, for they require special effort by the data-producing agencies and continued reinforcement by CIS. Quarterly notices of new research from BLS proved to be of limited value, in that they referenced only publications that would soon be distributed or announced anyway, and did not justify the special effort. For these reasons, these early notifications, including the one with BLS, have been abandoned. The reciprocal publication by CIS of a bibliography of new research has also been abandoned.

Personal contacts have been more helpful than those formal arrangements. By personal contact, CIS staff have been able to keep reasonably well informed and gain quick information about methodologies used by various agencies in their research.

Exchange of Data

Perhaps most satisfactory are informal exchanges of information between CIS and data-producing agencies. Typically, the exchange is initiated when one organization contacts the other, usually for information that is already available or can be provided with limited additional effort.

This sort of arrangement is fairly descriptive of the understanding CIS has worked out with the Oregon Employment Division. Basically, CIS submits occupational descriptions to the Employment Division's area manpower economists as members of review panels. The manpower economists are asked to review the description, specifically the sections on wages, current employment and employment outlook. They are not asked to develop information for the description, but if data are already available, they are encouraged to enclose it. In turn, the manpower economists are welcome to copy and use the occupational descriptions, other information files, and data sources which CIS has developed.

Again, though, the arrangements with the Employment Division are something less than was originally hoped for. At one time it was envisioned that manpower economists would assume a major role in the development of local information in return for more extensive use by the Employment Division of CIS services. This original design was planned and developed during a number of workshops, meetings, and correspondence, and culminated in a proposal to the Employment Division administration, but the agreement was never formalized.

While the effort did not produce a formal agreement, its planning served to inform the manpower economists about the mission and methods of CIS. This has resulted in a greater exchange of information between CIS research staff and the manpower economists on an informal basis. Several manpower economists have sent materials to CIS on an unsolicited basis. All have shown a willingness to help answer questions about their areas, especially when it has not entailed additional research. Several have requested and used CIS career and program planning information in fulfilling their local office and community responsibilities. This same willingness to cooperate at the staff level but unwillingness by administrators to make a formal commitment is evident in other manpower and education data-producing agencies.

Most of CIS' management of this data collecting process is decentralized among various staff personnel. Staff members have established working relationships and sustained the flow of materials from agencies, mostly on an individual basis. However bibliographies and other materials are systematically scanned for potentially useful information. The desired materials are then ordered by one secretary who helps monitor the requisition-receiving process.

With the recent expansion of CIS efforts into the development of new education components has come awareness of additional materials, publications, and new agency contacts in the area of educational information, but the most effective information acquisition strategies appear to be the same as for labor market information.

Thus, early attempts by CIS to negotiate formal agreements with data-producing agencies were largely abortive, primarily because of a fear by agencies that the amount of work required might exceed available staff time and a general aversion to formal commitments. These have been successfully replaced by quite informal, professional understandings between individual CIS staff and data-producing agencies' personnel. Once key persons in data-producing agencies develop respect for the professional treatment accorded their data by a CIS staff, they more willingly release reports not formally published for general distribution, including intra-agency documentary bulletins or memoranda, preliminary data reports, or even raw data. There are real advantages to close working relationships, and it appears that they are best achieved informally, by professional staff

in the CIS working closely with researchers in data-producing agencies in a reciprocal exchange of information and judgment, rather than through formal agreements. This requires the CIS to attract competent staff and to retain them over a long time span so they can develop these relationships. It also requires that information requests be modest, and it leaves the CIS vulnerable to budget cuts or changes in operating policies in the data-producing agencies.

These informal, professional relationships do provide opportunities for technical staff of data-producing agencies to understand some of the unmet data needs of a CIS, the most serious of which are occupational supply data and wage data. This understanding occasionally produces suggestions of other useful sources, and modifications in data collection methodology to make the data more useful to CIS. For example, the Education Coordinating Council (Oregon's 1202 agency) has revised some data formats to accommodate CIS, and the State System of Higher Education has substantially revised its public information materials to coordinate them with CIS information. However, it rarely produces explicit responses in the form of new data. These marginal responses are probably accounted for by the very informality of the relationship and the cost of producing new data.

Review Panels

Even with maximum use of available data, existing sources frequently do not satisfy the CIS need for conclusive information about various changing characteristics of an occupation. Thus CIS initiates requests for information. These requests include regularized procedures such as the use of questionnaires addressed to CIS Information Review Panel members and special inquiries (usually in the form of telephone conversations) and special requests to specific employers, manpower economists, training program directors, licensing board executives, and labor leaders. While requests to these informed sources may result in receipt of additional data or other information, they are often much more informal, evaluative comments from knowledgeable sources. Nevertheless they add measurably to a CIS staff member's "feel" for the subject.

The Oregon experience has demonstrated that in relations with data-producing agencies, a CIS must develop a wide variety of access methods as well as be prepared to use various data sources. A CIS must also realize that continued access to those data and their proper interpretation will be the responsibility of the CIS staff.

Confidentiality is another factor which sometimes interferes with the exchange of information between agencies. This problem is less amenable to solution unless CIS can meet the requirements for data release or the data gathering agency can be persuaded to convert the data into a format that avoids the confidentiality conflict. This latter solution, of course, incurs

additional costs which must be satisfied in some way. Fortunately this has not been a serious problem for CIS.

Finally, arrangements to obtain information from most agencies requires a considerable amount of management from the recipient organization. This conclusion is unavoidable and was agreed to strongly at a meeting of representatives of data-producing agencies. Very few agencies have designed and perfected good systems for notifying the public and disseminating information about useful research. As emphasized earlier, there is a need to identify agencies responsible for developing the necessary information. Furthermore, there is a need to assess the value of information sources and determine strategies for obtaining worthwhile information. This requires individuals with a combination of technical expertise and time and energy to do the work.

Conclusion

In conclusion, the development of linkages with other organizations was a strategic decision for CIS which seemed to be supported by the facts at the time the proposal was written. The costs of data development, the limited availability of certain information, and the reciprocal benefits of cooperating agencies like the Employment Division and Occupational Outlook Section of BLS all seemed to point in the direction of formal information development agreements.

The informal agreements arranged with the Oregon Employment Division, and other Federal, State and Local governmental bodies as well as private organizations such as professional and trade associations have produced a flow of standard publications as well as access to sources of relatively unprocessed information. In addition, knowledgeable persons in agencies and the community have been identified who help identify and interpret data and provide informed opinion.

POPULATION SERVING AGENCIES

The other major linkages that a CIS must develop are strong working relationships and clear operating policies with the schools, colleges, and social agencies where people are served. First, these institutions must become involved with the use of CIS services, then the commitment and service must be maintained.

In initiating use, these organizations can be involved with CIS in three general ways: as demonstration sites, as pilot sites, and as member institutions. The first, demonstration sites, are those where CIS services are demonstrated to agency and school personnel, with CIS absorbing part or all of the cost. This practice allows the agency personnel first-hand observation

of the System with their particular clients. With this experience, they are better able to decide upon the appropriate services for their clients' needs. Although the length of time for demonstrations can vary from a few hours to several months, those involved must remember that the purpose is to help agency staff make a decision about CIS use.

A second type of user involvement is best described as an experimental site. In this instance, a site is usually selected because of its unique setting or its special clientele, thus providing CIS the opportunity to conduct research with particular populations of clients or with new system components. For example, the Oregon CIS combined two research interests in a recent series of experimental sites in shopping centers. CIS needed to pilot test several new components describing educational and training opportunities, and it wished to continue to research into ways of serving non-institutionalized adults. Thus it established a series of six one-week centers in various shopping centers in the Portland area, with the costs of materials, staffing, computer services, coordination, and evaluation shared by CIS, three Portland area community colleges who are already using CIS on their campuses, and METCOM, the computer facility providing CIS services to the Portland area. This kind of arrangement taps the abilities and resources of several CIS members to answer questions of mutual interest.

The third arrangement with population serving agencies covers schools and agencies who become financial supporters of CIS and utilize its services with its students or clients. It is this group of agencies and schools who are regular CIS users and members of the consortium.

Strategies for Bringing about Involvement of Population Serving Institutions

In the beginning when a CIS has few regular users, it needs some effective ways of involving schools and agencies. As mentioned previously, permitting institutions to demonstrate use of the System with their own clientele is effective, and most become regular users. Selecting pilot sites where the service can be demonstrated effectively requires all or part of the following: (1) commitment to the CIS concept and interest in giving its services a fair trial in the pilot setting; (2) location near other institutions that are potential users of the System; (3) agreement that other potential institutions will be invited to observe the System in action; and (4) commitment to make a decision about regular usage following the demonstration. This type of pilot use of the System usually has a specific time period. Demonstrations may take a few hours, a week, or sometimes as long as several months. Usually CIS absorbs all expenses for such a demonstration, but it is important that the institution provide appropriate exposure and evaluation of the service. The demonstration should not become an extended period of use without commitment to integrate and support the System. The institution has an obligation to make a decision about System use. This decision

requires that CIS identify the key person in each organization who is capable of making decisions about career planning materials.

The initial demonstration period in Portland schools illustrates the benefits of such demonstrations. During the Fall of 1972, 14 Portland metropolitan area schools were selected from a number who volunteered to be pilot sites. Each committed personnel and facilities to make the System available to as many students as possible during the seven-month demonstration. Several substantial outcomes are visible. First, the pilot schools put the System in full operation and worked toward integrating it into their instructional and counseling programs. Secondly, due to their success and the interest of surrounding schools, local educators generated financial commitment from school districts in three counties of the Portland metropolitan area to CIS for the following school year. The leadership for establishing ongoing usage was provided by the Multnomah Intermediate Education District, a county-wide service agency in the largest county of the area. Thirdly, implementation in the metropolitan area was aided by the people in the pilot schools with experience from the demonstrations.

When CIS is a new service, involvement is enhanced by a general awareness of the System among school and agency personnel, including teachers, counselors, and administrators. This awareness is helpful because many educational organizations see concensus from a variety of staff members before making decisions that affect the educational program. It is advantageous to make the initial communication as directly as possible and to rely on word-of-mouth for endorsement rather than for explanation. Professional meetings provide one effective medium for such communications, and the novelty of an on-line computer system attracts the attention of meeting-goers. In its first year the Oregon CIS staff, supplemented by Board members, conducted over twenty such demonstrations at various meetings and conferences, reaching perhaps one thousand educators.

Newsletters of various statewide offices and organizations are also effective ways to inform educators and agency personnel about CIS. A brief brochure outlining the CIS goals, services, and structure is a useful item for many such presentation.

Division of Responsibility Among CIS and User Agencies

For institutions who become regular users of CIS services, the specific responsibilities of both the institution and CIS need to be clearly defined and communicated.

In Oregon, the CIS has taken full responsibility for the development and maintenance of the occupational and educational information files, including

both the research and loading of the information into the computer files. CIS also takes responsibility for making improvements to the QUEST and other computer programs. Thus, CIS provides operable programs and updated files to computer centers who run the program. In addition to the development and loading of current, localized information to the computer, CIS takes responsibility for providing printed copies of materials necessary for System usage. These include User's Handbooks, a Coordinator's Manual, and essential books referenced in the Bibliography. For Needle-Sort System users, CIS also produces and provides the Needle-Sort Card Decks, sorting needles, and printouts of the information files.

While the Oregon CIS is responsible for the quality and currency of data files and programs and retains ownership of the computer programs, it does not itself operate the computers. That function is provided by a limited number of computing centers that serve multiple member institutions in various areas of the state. These computing centers are responsible for response time and reliability of the computer systems, arranging for hardware installation in local schools and agencies, and for operating the most current version of the System provided by CIS.

Cooperatively, the CIS and user agencies have developed format and methodology for in-service training, materials distribution, and follow-up services. A good deal of the evaluation has also been cooperative endeavors. Such a model of cooperation between CIS and its users not only reflects the spirit of the consortium but adds to a deeper commitment by both. It has been very apparent on several occasions that cooperation in a particular activity has resulted in a significant financial advantage to both CIS and the user agency. A case in point is the printing and distribution of User's Handbooks in the Portland metropolitan area. While CIS is responsible for supplying printed materials, CIS and the intermediate education district serving that area have developed a plan whereby CIS develops the Handbook's correct format, and the district prints, collates, and distributes them to users in the area in adequate quantities to meet the need.

It is often advantageous to schools in the area and to the CIS to establish group agreements covering all of the schools in a multi-county area. County school offices provide this kind of joint purchasing and coordination of other services. This approach has been followed in remote rural areas of Oregon as well as in the metropolitan areas as a way of providing local coordination and financing of CIS services without requiring CIS staff large enough to work directly with each individual district. In Oregon, the area career education coordinators have played active leadership roles in county-wide and multi-county agreements. This cooperation permits CIS to maintain only a limited in-service training staff because local personnel assume some responsibility for training and trouble-shooting. There are additional advantages to this arrangement in that there is a local contact person to handle problems, and that person is more likely to be familiar with the peculiarities of the local situation or clientele, which differ

between community colleges, junior high schools or correctional institutions. In general, it is advantageous for CIS staff to participate in area-wide in-service training sessions, but to let local coordinators provide the additional follow-up sessions.

The individual population-serving agencies have some specific responsibilities too. First, they agree to distribute and use the materials and programs of the System as they have been directed during the in-service training. They agree to communicate with the CIS on problems they may encounter in the use of the System or suggestions that they may have for its improvement. In the case of schools and agencies that are financial supporters of CIS services, they take responsibility for the necessary budgetary and invoicing procedures to insure payment.

Continued communication with these individuals is essential, for they all have other predominant responsibilities. For this purpose, the Oregon CIS initiated a newsletter and in 1974 conducted a telephone survey with all two-hundred coordinators. This survey revealed general satisfaction with the present division of labor, identified and resolved some minor problems, and stimulated renewed interest in system usage. Some such periodic, personal contact is probably essential.

Service Agreements with Population Serving Institutions

It is very important to them as well as to CIS that communication concerning the System be clear and understandable. To assist in this process, the CIS writes a service agreement (See Appendix B) with each agency or school who is contracting for its services. This agreement outlines fully the responsibilities of both the CIS and the institution. Having administrative staff from both institutions sign this agreement and having it ratified by the CIS Board fully informs all parties of their rights and obligations. It is desirable that this agreement be completed prior to the time the System becomes operational in an institution.

In addition, the Oregon CIS's Board of Directors established in 1971 some "Standards for Use" (See Appendix C) that cover most of the circumstances in which a user agency might find itself. These standards describe authorized and unauthorized practices, and school and agency personnel agree to follow them in using the System. Most people appreciate having such guidelines spelled out, and to date, no one has found the Standards overly restrictive or too complicated.

Conclusion

Population serving agencies constitute one of the essential links in the career information dissemination system, for those agencies are the principal

institutions through which individuals obtain information for their career planning. Moreover both financial and program responsibilities rest on those relationships because there is limited opportunity for consultation with agency staff.

Several things seem to be essential to this kind of cooperative venture. One, of course, is an effective strategy for involving population serving institutions. Successful implementation, however, requires clear agreement with regard to responsibilities and periodic contact with all who participate in providing the service.

SUMMARY

Realization of the need for coordinated management of occupational information antedated the formation of the Career Information System. When representatives from data-producing and occupational information-using agencies began to assess the need and possibilities of responding to it, several factors converged to make CIS a reality. The Oregon Employment Division was involved in substantial occupational labor market research; the Oregon Board of Education was developing a major career education thrust, and the Occupational Information Access System was proving an effective means of delivering occupational information to individuals involved in occupational exploration and career decision-making. These factors and the unified commitment of the group of agency representatives eventually resulted in a proposal for establishment of the Career Information System as a model interagency consortium with the purpose of providing direct access to current career and labor market information in forms meaningful to students and clients and integrated into schools and social agencies in the state. With essential endorsements and pledges of cooperation from the heads of pertinent state agencies and local organizations, the Career Information System was established under the authority of a Board and a staff was organized to compile labor market data and facilitate the integration of career information into agency and school counseling and instructional programs. CIS has developed strong working relationships with its user agencies entering with them into formal agreements which clearly communicate the specific responsibilities of each; it has involved these user agencies in continued development of the CIS function and has specified and obtained agreement on "Standards for Use" of the System. Regarding data-producing agencies, CIS has used all the regular sources of data as well as a host of relatively unprocessed sources of data to fulfill its function. Formal information development agreements proved infeasible, but CIS staff have established effective working relationships with researchers in agencies and other informed sources in the community. CIS has substantiated that a complete information system can be built by supplementing existing research and service activities with an integrated information delivery system.

CHAPTER III

INFORMATION DEVELOPMENT

An effective delivery system is a boon to the delivery of career information, but it does not diminish the need for accurate information, in fact, it intensifies it. Implementation of a career information system requires major efforts, both with regard to information development and information delivery. Neither is an easy undertaking; taken together they present an even greater assignment. But they cannot be taken separately because they are complementary features of a single system; neither is functional alone. Unused information is of no consequence; an empty delivery system is a meaningless exercise. A CIS must utilize all available resources to build a system for the development, updating, and delivery of occupational information. This chapter describes the system for developing accurate, current, and localized occupational information.

There are two key elements of information development--sources and process. Stripped to its barest essentials, the development of information is a matter of obtaining data and preparing the conclusions. Of these two elements, obtaining information is the more complicated and expensive process. Therefore, organizations intent upon producing occupational information must solve the problem of obtaining data--the raw material. The CIS strategy of utilizing existing data from existing data-producing organizations and resources was discussed in Chapter II.

This chapter, like others, will attempt to outline a system for using good but inadequately integrated components, with special emphasis on procedures for translating basic data into readily understood information.

ECONOMICS OF INFORMATION DEVELOPMENT

A coherent information development mechanism requires a consistent rationale. How many occupations should one include in such a system? Upon what basis does one decide what topics to emphasize? Where should the balance be made between detail, currency and cost?

The development of labor market information is more than hiring a labor market analyst, just as effective counseling services require more than just hiring counselors. There are distinct cost considerations with regard both to the number of occupations and number of information items to be developed, as well as the extent of localizing, sophistication of storage and retrieval systems, and frequency of updating. It is useful, therefore, to consider some of the economics of labor market information.

Information is itself a product, is costly to produce, and is unevenly consumed. Further, information on some occupations and topics is more costly than others, information for some items and occupations is more strongly needed than for others.

Theoretically, for the same expenditure, it would be possible to produce a few units of information for few occupations. In between, a large number of combinations of information units and occupational cells could be produced.

Number and Organization of Occupations

Generally, CIS has attempted to provide information at a level of detail that is useful for career exploration as well as feasible from the standpoint of data collection. Developmental theories such as those of Ginzberg and Super seem to require information that is increasingly sophisticated and presumably increasingly detailed as the person passes through the stages of development. It seems likely that great detail in the identification of occupations would only confuse clients in the early stages of career choice. Individuals in later stages of career choice probably need more detailed labor market information, and may therefore find greater occupational specificity to be more relevant; although the literature on career choice leaves the impression that more comprehensive information about fairly broadly defined occupations is of greater urgency than more detailed definitions. The Dictionary of Occupational Titles (D.O.T.) lists over 20,000 entries, including for example, over 30 distinct welding specialties. Broader grouping is more useful for occupational exploration and more consistent with present research capability. Therefore, as a result of grouping, a much smaller number of occupational titles can reasonably account for nearly all employment (See Appendix H for the list of CIS occupations.)

The occupational classification system used by the Career Information System seeks to group and classify occupations on the basis of similar functions. It does not use skill level nor industry attachment as classifying variables except insofar as some occupations are unique to skill levels and industries. The classification includes the full range of skill levels, economic functions, and industrial attachments. Organized by similarity of job function, the classification

system does not use categories of level such as professional, skilled and unskilled occupations, so it tends to de-emphasize socio-economic status distinctions among occupations. Instead, it groups together occupations which serve similar social and economic functions, e.g., by grouping physician, physical therapist and nurse aide in health services. This approach is highly preferable for career planning and permits comparability between career planning information and career education cluster programs.

The classification system starts with occupational titles from the Dictionary of Occupational Titles. Because these categories are usually too detailed for career planning purposes, they are treated as occupational specialties. The occupational specialties are grouped to form the next level of detail--the occupations. For convenience, the occupations are numbered so that those with related functions, such as construction or health services, are listed consecutively.

The methodology used to select the occupations is based on several decision rules that are both technical and philosophical. Basically, the original selection of occupations satisfied the following criteria: (1) they include all the large sources of employment; (2) they represent a wide range of economic functions and industrial attachments particularly in Oregon and the region; (3) as use of the System has expanded, the categories have come to reflect the interests of users as well.

The primary information development of CIS is at the level of the occupation, and the system contains 225 occupational categories. The actual selection of occupations was initially made from data generated by 22 area skill surveys conducted by the Oregon Employment Division in 19 labor markets in Oregon. These surveys employed the classifying system of the Dictionary of Occupational Titles. Those studies use about 4,000 of the extremely detailed DOT categories (22,000 "9-digit" categories) to classify employment in Oregon. For career planning purposes the data were grouped according to similarities of function and job duties. The present 225 groups encompass approximately 3,000 of the 4,000 codes found in the state, including those with 90 percent of the employment. Other sources, notably the Occupational Outlook Handbook, Tomorrow's Manpower Needs matrix and the California Occupational Guides were consulted to identify occupations which were significant in the region and nation but over-looked by the Oregon data. These occupations were added; however production occupations in industries unique to other regions are included in only very broad terms.

Observers of the system often wonder how applicable the list of occupations would be for other areas, considering the fact that Oregon is a small state that is not highly industrialized. There has not yet been a detailed examination of the list vis a vis the employment data of a large industrial state but there have been several reviews of the list by people knowledgeable about the labor

markets in other states. They have concluded that the list and even much of the information would be appropriate in other areas. The occupational categories that would need changing are readily identifiable -- reduction in wood products and commercial fishing entries and increases in industries that make up the export base of the other area, e.g., metal refining, petroleum processing, etc. These required changes are virtually all in production occupations, not in the administrative, distribution, and service areas. Changes in occupations of the latter types would largely reflect decisions regarding the desired level of occupational detail rather than different employment patterns.

Information Topics

Another aspect of information development concerns the units of information developed for each occupation. Costs for any size information package depends in part upon the particular items selected as units of information. Information that is generally considered essential in any occupational information program is usually available to some extent already (other data producers have also judged them essential); consequently these items are least costly to collect. Currently there are approximately 20 to 25 items per occupation for which information may be developed. The 20-25 information items cover the following topics: function; job duties; occupational specialties; current employment; employing industries; work environment; work schedule; organizations; wages and supplements; physical abilities and aptitudes; legal qualifications; education, training and experience; types of training; demand; supply; and outlook. Of course, all topics are not covered exhaustively but there is an average of nearly two information items per topic.

These information items also exhibit variation in their costs of production. For example, the information items can be separated into two groups. One group of information items exhibits little variation between geographic regions, either because the item relates to the definition of the occupation or because information sources obscure whatever area differences there may be. These items are found within the following topics: function; job duties; occupational specialties; environment; work schedule; physical abilities and aptitudes; education, training and experience requirements; employers. The other group of information items exhibit considerable potential for variation among geographic areas. This requires localizing the occupational information. As such, the information is less readily available and is more costly to produce. These items are found within the following topics: legal qualifications; training sources; employee organizations; current employment; personal characteristics; wages and supplements; demand; supply; demand/supply.

Further information is still more costly to provide because its utility is low unless it is localized, and yet, area specific information is even less likely to be available. Some of these items include specific aspects of wages and supplements, geographic location of jobs, detailed descriptions of training courses, and more detailed descriptions of occupational specialties. Much of this can be thought of as job search information.

Other factors such as accuracy and currency of information and level of localization are also basic cost determinants. The influences behind these cost determinants follow:

Accuracy of information. Accuracy of information is increased by comparing published information with other information sources. Attempts to increase the accuracy of information incur rising costs beyond a point, because the number of sources is limited. Additional sources of information can be developed or located only after an exhaustive search, both of which are costly.

Currency of information. Currency of information is increased by shortening scheduled updating cycles. Attempts to increase the currency of information incur rising costs beyond a point, because data sources are updated only infrequently. Updating cycles are unproductive when new information is not available.

Localizing information. Localization is increased by developing information for sub-state regions or labor markets. Attempts to localize information incur rising costs because of the increased number of areas and the frequent absence of data for small areas.

Such an economic analysis of occupational information suggests an optimum combination of factors. The costs associated with increasing the number of occupations and information items, the level of accuracy, currency, and localization suggest that none of these factors should be extended indefinitely. Instead, the interests of users and the costs of producing occupational information intersect at an earlier point. The characteristics of these factors must be considered carefully in bringing the information to its optimum state of development.

The level of development in CIS at present and future plans for each of these factors follows:

Number of occupations. Currently there are 225 occupational categories in the System. With this level of detail, it has been possible to describe about 90 percent of the state's employment in occupational categories (e.g., welders,

physicians, bookkeepers) that serve the occupational exploration purposes of most users quite satisfactorily.

There will be additions, deletions and revisions. As the system matures, the list of occupations is examined for better ways of combining and titling occupations and for significant omissions and obsolete occupations. Since the occupational list was originally developed, most changes have been to combine and retitle occupations, to add occupations, and to reclassify occupational specialties as occupations.

The selection process for new occupations has not been rigidly defined, and is intended to respond to several types of needs. The primary criterion is that a new occupational addition should represent a substantial amount of employment or some major or unusual labor market development. Other factors that are considered in choosing new occupations are 1) those occupations of special interest to large numbers of users and 2) emerging occupations that are growing or attracting special interest.

The procedure for updating the occupational list provides opportunity for continuous review, although for managerial feasibility changes are made only once during the year. Suggestions for revisions are invited from all who use the System. Typically, suggestions come from counselors, teachers, or students who have sought and been unable to find information on an occupational specialty; from members of review panels who have examined the information and recommend that an occupational specialty be handled separately or a different occupational title be used; or from local Employment Division manpower economists who recommend the addition of occupations unique to their areas.

Staff suggestions are usually the result of a more technical analysis. Permanent research records that include a listing of the occupational specialties with current and projected employment figures for each of the occupations have been constructed. Further, an occupational specialty code sheet which summarizes the attributes and worker traits has been completed for the largest occupational specialties for each occupation. Examination of these variables - current and projected employment, attributes and worker traits - is conducted periodically to determine whether the particular combination of specialties is the most useful for analytical purposes. Review and development of information files provides another opportunity to test the occupational categories for analytical usefulness. For example, if it is impossible to discuss and generalize about all of the significant occupational specialties within the limited space provided for each occupation, then a finer breakdown may be needed.

The Oregon CIS has been particularly interested in identifying student interest in other occupations. This often occurs incidentally, but some school coordinators in charge of the CIS usage voluntarily maintain a list of new occupations requested by their students and forward them to the Director's office.

Other suggestions pertaining to student requests were obtained during a telephone survey of school coordinators, conducted in the spring of 1974 by a CIS student research assistant. Many times members of the CIS staff receive suggestions for possible new occupations while conducting in-service training or attending conferences. Finally, CIS specifically requested suggestions for changes in the occupational list from its users in its newsletter, Update. All these suggestions are filed for examination once a year.

Accurately assessing user interest is a continuing problem which could benefit from more formalization. Possible considerations would be providing a "suggestion box" near the CIS materials; posting a "suggestion list"; canvassing the coordinators with a brief questionnaire annually; or systematically asking classes that use the system to complete questionnaires in which new occupational suggestions are requested.

News of emerging occupations is more readily available, and is derived from various publications received by CIS from private and public research organizations. Although the CIS emphasizes the Oregon labor market, it also seeks and acquires regional and national labor market data, and this policy greatly aids the process of identifying potential occupations that could be added to the system.

Of course, limited resources preclude acting on some useful suggestions. A surplus of suggestions relative to resources is typical of occupational information systems, and that imbalance is not likely to change. As a result, suggestions must be examined and ranked. Only the suggestions that can be accomplished and maintained within allocated time are implemented, or the overall quality of information begins to deteriorate.

Changes in the occupational list are best made in the spring of the year so they can be reflected in new materials developed during the summer for fall use. Decisions to add or change occupations must be made on the basis of several factors: large employment or rapid growth, identifiable user demand, availability of data with which to prepare the necessary file entries, and the availability of staff time to develop and maintain the files.

Number of information items. Currently, there are approximately 20-25 items per occupation for which information may be developed. Information is not always developed for every topic when their significance is slight or when data and information are not available.

The information files have undergone gradual restructuring. For example, by simplifying and minimizing statements developed around current employment, employees organizations, and job duties, more effort, time and file space could be allotted the employment prospects section of an occupational description.

By broadening statements about wages and current employment (as opposed to citing exact figures for these topics), the length of these statements were not only reduced, but the items also retained longer serviceability without seriously sacrificing accuracy and currency. This simplification considerable eases the amount of research and updating that these highly perishable topics demand and adequately serves persons involved in the career planning and exploration process.

Accuracy of information. Accuracy of information is hard to measure but several attempts can be made to improve it. In most instances, and especially when information is highly variable and difficult to validate, more than one source is used to develop the information. Files for each occupation are submitted to review panels composed of five to seven persons for examination and validating. These review panels are comprised of local residents who are familiar with a particular occupation. Typically they include: an employer, a worker in the occupation, an educator in that field, a placement officer, a labor market analyst, and an expert observer. Currently there are review panels for all occupations involving over 1,000 different individuals from various parts of the state. Descriptions and instructions are mailed to the panel members, and their returned comments are examined and verified before being loaded into the information files when appropriate.

These panels are a valuable asset in assessing the validity of files. The average return of these mail review panel is well over 50 percent; of this figure, generally 75 percent of the respondents are satisfied with the content of our files; and the remaining 25 percent generally suggest minor changes, with a few recommended major changes.

Currency of information. Information is continuously updated as new data become available. In addition there are major reviews which are scheduled every six to eight months. The result is that each occupation is examined systematically twice a year. Of course, every information item is not updated each time, but neither is new data available for every information item. Systematic reviews of the information files increase the confidence of users who often seem convinced that the characteristics of occupations are in a constant state of flux.

Localization of information. One feature that distinguishes OIAS from other occupational and career educational systems is its delivery of localized labor market information for different geographic areas. Developing such information is a relatively costly and time-consuming process - particularly for small areas for which there are few current studies and publications and limited data regarding the local economy and labor market.

A statewide description file is useful to minimize unnecessary repetition in geographic area files. This file is designed for use throughout the state in places where local information is unavailable or unnecessary. Area differences are noted in this file, along with statements about an occupation that apply on a statewide basis. When local labor market conditions for a particular occupation are not significantly different from the prepared statewide file, then this file is implemented and no specific, geographic file is developed. On the other hand, when area conditions do differ, e.g., when employment opportunities in a given area differ considerably from the statewide trend for the occupation, area specific information is developed.

People knowledgeable about local areas, such as the Manpower Economists and local office managers of the Employment Division, help the CIS staff determine which occupations should be researched for possible localization. A list of CIS occupations, a map and a brief explanation of the geographic divisions, and a statewide description file are provided. They then indicate which of the CIS occupations should definitely be localized for their respective areas, and which occupations require further research to determine if localization is necessary.

Using these recommendations as a point of departure, CIS information development staff begins to create a local area file. While gathering information, the staff simultaneously develops the review panels described earlier. Members are contacted through a variety of methods - local newspaper clippings, the telephone directory, professional directories, and school catalogues.

Localization of information is accomplished through separation of information items into two groups: Information that varies between geographic areas and that which doesn't. Only the information that varies between geographic areas is localized. For the rest, the same statement is delivered in all areas. Information for the state is used in areas new to the System until localized information is developed.

INFORMATION SOURCES

In developing data gathering methods, every organization faces a unique set of constraints determined by its resources, its structure and its connections with other organizations. A Career Information System has its own set of constraints and connections. By tradition the production of occupational information has been the province of research sections in the employment security agencies and the Bureau of Labor Statistics. By virtue of their organizational structure, these research organizations have access to a number of important data sources that exist regardless of the level of research funding. For example, personnel

performing occupational research in the employment department have access to job orders with accompanying wage information, job applications and unemployment insurance claims, quarterly reports of employment, and the observations of counselors and placement specialists. By the same token, many other organizations have information that is valuable in an overall assessment of occupations. Among these are regulatory agencies, employer associations, and schools.

In the case of the Career Information System, because of its smaller size and more generalized function of facilitating the delivery of information, it seems most realistic to rely first on the useful data already being generated by these many organizations, and to concentrate on helping people engaged in career and program obtain and understand it. This usually requires translating data from technical formats that are neither appealing nor accessible and summarizing studies that often go into more detail than the typical user wants. Instead of bypassing these sources, the best strategy for a CIS is to depend largely on existing data and to increase access to this data through cooperative linkages with data-producing organizations.

Specific Data Elements and Descriptive Information

Sources of data. In order to achieve its information development functions, a CIS must constantly identify, acquire, and update information concerning the many characteristics of occupations and the labor market pertinent to the general functions of CIS. Although the geographic emphasis of concern may be a single state, there are several reasons for acquiring labor market data for other areas as well. Some occupations not well represented in local industry may be of potential career interest to many students. Likewise, there are other significant gaps in strictly state labor market data which may be fairly inferred from data for other areas. Furthermore, no state labor market operates in an economic vacuum; national and regional economic forces have major impacts upon any state's economic health. Out-of-state information is often the only source of knowledge about changing job duties and clarification of worker trait requirements. Thus, it is necessary to go beyond the state's boundaries for information.

In an era of expanding formal training, raw figures on population growth or decline for an area, even when broken down by sex, age group, and employment status, are inadequate measures of current or future manpower supply. Therefore, it is essential that information relating to the capacity and rate of completions for training and educational programs be obtained also. Because of their impact on training capacity, it is similarly necessary to acquire information about various educational policies.

Table 1 lists the major sources of the information needed by CIS. It is illustrative rather than exhaustive, and emphasizes local rather than national sources.

Table 1

MAJOR INFORMATION SOURCES

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
Nature of Job (including function, duties, & occupational specialties)				
(1) Dictionary of Occupational Titles (D.O.T.)	Manpower Administration (MA) U.S. Dept. of Labor (D.O.L.)	National	Published (3rd Edition 1965)	Varies
(2) Occupational Outlook Handbook (O.O.H.)	Bureau of Labor Statistics (BLS) D.O.L.	National	Published (1974-75 Edition)	Biennially
(3) California Occupational Guides (Cal. Occ'al. Guides)	Cal. Dept. of Human Relations Development	California, but generally applicable to Far West	Published in looseleaf, inserted in binders	Varies
(4) CIS Review Panels	Created by CIS Data Development Section	Oregon statewide	Committees (1 per occ.) contacted by mail or phone	Continuous
(5) Professional, occupational, or industry brochures	Various associations	Usually national	Published leaflets, booklets, or pamphlets	Varies
(6) Position descriptions of large employers (e.g., state or county governments)	Oregon Personnel Division and personnel depts. of cities and counties, major industries	Varies with the employer	Usually printed for in-house use	Varies, but usually annually
(7) Oregon's Current Occupational Employment Statistics Program With Projected Occupational Employment Statistics for Oregon... (O.E.S.'72)	Research and Statistics Section (R&S), Oregon Employment Division (O.E.D.)	Statewide and 6 state administrative districts	Published (but CIS has added D.O.T. codes)	1972, w/data updated semi-annually & pub. biennially

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
(8) Employer Index	R&S and CIS	Portland SMSA	Computer printout	1971, no plans for updating
(9) Oregon Occupational Employment Statistics: Manufacturing Occupational Coefficients By Employment Size Class (O.E.S.-Mfg.)	R&S, OED	Oregon statewide	Unpublished tables, in-house compilation	Biennially
(10) Occupational Employment Statistics Conversion Manual (Converts O.E.S., D.O.T., Bureau of the Census, and BLS I-O Matrix Codes-MIC has added CIS Codes)	Tom Lynch: R&S, OED Manpower Information Clearinghouse	National	Unpublished tables, in-house compilation	1974. Modified as needed
(11) Health Resources Statistics, 1972-73 (H.R.S.)	National Center for Health Statistics, DHEW	National	Published descriptions, tables	Annually
(12) Manpower (magazine)	MA,DOL	National	Published journal	Monthly
(13) Occupational Outlook Quarterly (O.O.Q.)	BLS,DOL	National	Published journal	Quarterly
(14) Monthly Labor Review (M.L.R.)	BLS,DOL	National	Published journal	Monthly
Working Conditions (including environment, work schedule, current levels of employment, & earnings)				
(2) O.O.H.				
(3) Cal. Occ'al. Guides				
(15) 1966 Supplement to the D.O.T.	MA,DOL	National	Published	Varies

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
(4) CIS Review Panels				
(7) O.E.S. '72				
(16) Tomorrow's Manpower Needs Vol. IV (T.M.N.)	BLS, DOL	National	Published tables	1969, 1971
(17) Oregon's Labor Force Trends	R&S, OED	Oregon statewide	Published tables and charts	Monthly
(18) Labor Force: Employment; Unemployment; Hours and Earnings; Turnover--In The State of Oregon and Portland, Eugene, and Salem Metropolitan Areas	R&S, OED	Oregon statewide and the Portland, Eugene, and Salem SMSA's	Published in looseleaf	Annually
(19) Monthly Economic Letter	First National City Bank	National	Published newsletter	Monthly
(20) Labor Force Trends (L.F.T.)	Local area manpower economists of OED	26 local areas & 14 Oregon administrative districts	Published commentary tables & charts	Monthly
(21) Labor Force in Oregon Counties	R&S, OED	Table for each county except SMSA's	Published looseleaf, sheets placed in binder	Annually
(22) Occupational Trends: Washington State, 1970-75	Research & Statistics Branch, Washington Employment Security Dept.	State of Washington	Published report with commentary and tables	Oct. 1971, updating plans unknown
(23) 1970 Census of Population	Bureau of the Census (B.O.C.) U.S. Dept. of Commerce as processed by Bur. of Gov't Res. & Service, U of O	Oregon statewide, SMSA's, CCD's, ED's	Published tables and magnetic tapes with computer printouts	Aug. 1972 decennially

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
(24) Job Bank Openings Summary (JBOS)	MA, DOL	Varies--90 to 150 Reporting Job Banks across the nation	Microfiche	Monthly
(25) County Area Skills Surveys also known as Manpower Resource of (county or area)	R&S, OED	Individual counties or small groups of counties, Portland area	Published	1962 to 1970, superseded by Industry-Occupational Matrix Estimates (1971-72) and by #7 and #9 above
(4) CIS Review Panels				
(26) Area Wage Surveys	BLS, DOL	Portland & Eugene SMSA's	Commentary with tables	Annually
(27) Cooperative Salary Survey Report (CSSR)	Oregon State Personnel Division and Local Government Personnel Institute	Oregon	Published in looseleaf with methodology, participants, and tables with occupational definitions	October 1973, Annually
(28) Licensed Occupations in Oregon (L.O.O.)	Occupational Analysis and Testing Section, OED	Oregon	Published listing with standards	1970, 1972, now being updated
(29) General Schedule (of salaries and wages for Federal employees)	U.S. Civil Service Commission	National	Published	As revised and published
(30) Union contracts as reported by--	Bldg. Trades Council, and by BLS Regional Office	Eugene, Portland, Oregon & Pacific Coast states	Phone contacts & published BLS data	As needed (phone) and quarterly by BLS

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
(31) Special Wage Surveys	Oregon E.D. manpower economists	Oregon administrative districts	Unpublished data obtained by phone	Intermittent
(32) U.S. DOL News	BLS, DOL	National	Published	Occasional
(33) Area Trends In Employment and Unemployment	MA, DOL	National and local	Published bulletin	Monthly
(34) Business Review	Federal Reserve Bank of San Francisco (FRB-SF)	9 Western states (12th FRB District)	Published magazine	Quarterly
(35) Business & Financial Letter	FRB-SF	9 Western states	Published newsletter	Weekly
(36) Western Economic Indicators	FRB-SF	9 Western states	Published tables	Monthly
(37) Business Review	Business Research Division, Pacific Northwest Bell Telephone Co.	Oregon and Washington	Published newsletter	Monthly
(9) O.E.S.-Mfg.				
(11) H.R.S.				
(12) Manpower				
(13) O.O.Q.				
(14) M.L.R.				
(38) Interim Manpower Projections, U.S. Census occupational employment adjusted to 1972 levels with projections to 1980 and estimated average annual expansion and replacement needs	R&S of OED	Oregon statewide and Portland Metro Area	Published 1974	Undetermined

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
Qualifications (including native qualifications, education, training, & experience required)				
(2) O.O.H.				
(3) Cal. Occ'al. Guides				
(4) CIS Review Panels				
(11) H.R.S.				
(12) Manpower				
(13) O.O.Q.				
(39) Manpower Resource of the Portland SMSA	R&S, OED	Portland SMSA	Published	1968, no plans for updating
(40) Occupational Manpower and Training Needs	BLS, DOL	National	Published as Bulletin 1701	1971, updating plans unknown
Institutional Setting (including types of employers, promotional ladder, legal qualifications, employee organizations, & hiring channels)				
(2) O.O.H.				
(3) Cal. Occ'al. Guides				
(4) Review Panels				
(11) H.R.S.				
(12) Manpower				
(13) O.O.Q.				
(16) T.M.N.				
(41) Oregon Trade Associations	Various associations	Oregon statewide	Unpublished, data obtained by phone	Continuous
(42) Directory of Oregon Manufacturers (D.O.M.)	Oregon Economic Development Division	Oregon statewide	Published index with cross indexes	1972, 1974

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
Employment Prospects				
(42) D.O.M. (7) O.E.S. '72 (16) T.M.N. (20) L.F.T. (24) JBOS (2) O.O.H. (3) Cal. Occ'al. Guides (4) CIS Review Panels				
(43) Newspaper articles	Eugene, Medford, Coos Bay, and Portland newspapers	Local, statewide, and national	Newspaper articles	Daily or as available
(44) News magazine articles	Newsweek	National	Magazine	Weekly
(45) Professional and semi-governmental journals, newsletters, and job listings (e.g., TAB, Job Finder)	Various professional societies (e.g., Amer. Soc. of Planning Officials), semi-gov'tal orgs. (e.g., WCRA), Western City	National, regional	Magazine	Varies
Education and Training Sources; Rates of Supply				
(46) Reports of graduates & other training course completions from Oregon post-secondary institutions by program & by year (2) O.O.H.	Oregon Educational Coordinating Council (OECC)	Oregon statewide	Published reports with tables and commentary	Annually

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
(47) Guidepost	American Personnel and Guidance Association	National	Published newsletter	Bi-weekly, except July and August
(48) Annual enrollment totals for Oregon post-secondary schools and colleges by program	OECC	Oregon	Published commentary and tables	Annually
(49) College Educated Workers, 1968-80	BLS, DOL	National	Published	Unknown
(50) Apprenticeship and Training Summary	Oregon Bureau of Labor	Oregon statewide and by county	Published	Semi-annually
(4) CIS Review Panels				
(51) Various publications of Women's Bureau (e.g., Handbook on Women Workers, Women in Apprenticeship, Careers for Women in the 70's)	Women's Bureau, DOL	National	Published	Irregularly
(52) The College Handbook	College Entrance Examining Board	National	Published books (2 vol.)	1972, updating plans unknown
(53) Mapping Your Education	Abbott, Kerns & Bell Co.	Oregon and Washington	Published book	Annually
(54) Steps Beyond High School (Educ. programs offered by public & private institutions in Oregon)	Oregon Board of Education	Oregon	Published looseleaf directory	June 1972, continuously updated by OBE

Table 1 (Continued)

Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
(55) College, university and proprietary school catalogs	All Oregon post-secondary public and private schools	Oregon	Published catalogs, course and program descriptions	Annually
(56) Barron's Profiles of Colleges	Barron's Educational Series, Inc.	National	Published book	Annually
(57) Higher Education General Information Survey (HEGIS) Reports	Oregon Educational Coordinating Council (OECC)	Oregon	Published reports with tables	Annually
(58) Reports of graduates, programs, requirements at state system schools	Oregon State System of Higher Education (OSSHE)	Oregon	Published reports with tables and commentary	Annually
(59) Transfer Curricula	OSSHE	Oregon	Published report	1973, annually
(60) Institutional Questionnaire	Educational Components staff of CIS	Oregon	Questionnaire mailed to all schools	Annually
(28) L.O.O.				
(61) Statistical Report	Oregon Bureau of Labor	Oregon	Tabular reports	Semi-annually
(62) Apprenticeship Standards (for various occupations)	State of Oregon Apprenticeship and Training Council	Oregon Counties	Published in looseleaf	Quarterly
(63) Inventory of Post-Secondary Educational Programs in Oregon	Oregon Educational Coordinating Council (OECC)	Oregon	Published report with tables	Annually

Establishing Information Sources

A key element in developing a flow of information is identification of data-producing agencies. A list of major data-producing agencies appears in Appendix E. Obviously, there are thousands of other organizations such as professional and trade associations that produce some occupational information, and a CIS must remain alert for other agencies that produce pertinent occupational data. A useful document in identifying some of these data sources has been prepared by Arthur Schwartz of the University of Michigan.[1] Information offices of the national and regional offices of major federal agencies, the U.S. Government Printing Office, the State Employment Security Agencies, State Department of Education and education planning bodies are all important sources.

Another important task is the identification of staff members in the data-producing agencies that are knowledgeable, accessible, and in a position to release the information. This is obviously less critical when all that is desired is placement on a mailing list.

When an agency does not publicize its research but the data output of the organization is still considered important, CIS must take steps to identify and monitor the research output. This requires meetings of representatives of data-producing agencies, periodic surveys of research in progress, and informal inquiries about possible sources. All of these methods are helpful in identifying useful research output of organizations that do not primarily produce occupational or educational data, such as the State Economic Development Division which includes CIS on its mailing list for some publications, but not all.

Where confidentiality of information is not an issue, cost considerations usually determine accessibility of data. When an agency publishes something that is of broad public interest, typically it establishes a mailing list as a means of distribution. Because the additional expense of adding another name to the list is inconsequential, there is no problem in obtaining the data. Even though the total cost of the publication and mailing may be substantial, the marginal cost of another name is very low.

However, when an agency compiles a data series which it is not accustomed to releasing to the public, either because of limited interest or absence of mailing list, it is often more difficult to obtain the data. Often times, it is possible to arrange a special mailing, but this is more difficult and much less reliable when the data output is ongoing, and the mailing requires more than a one-time commitment. Here the marginal costs to the agency of mailing may be quite a bit greater than in the first instance.

---

[1]Arthur R. Schwartz, An Index to Major Published Data Elements, (Ann Arbor, Michigan: Institute of Labor and Industrial Relations, 1972).

More difficult is the situation where CIS needs the information of an agency that is not already processed or prepared for public release. Potentially there is a great deal of this information within agencies like the Employment Division, Economic Development Division, and the Department of Education. Since data processing and preparation are potentially high cost items, agencies are naturally hesitant to commit themselves. Here the marginal cost of processing and mailing can be quite high indeed. Agencies may be more responsive if financial reimbursement is offered, but this is sometimes complicated by bookkeeping systems. For example, discussions with the Personnel Division of the State of Oregon indicate that financial reimbursement would be the only basis on which they would supply CIS with a position classification plan.

Use of Various Sources

Three principal types of data are available (1) published sources such as data from the Job Bank Openings Summary, and other unprocessed data; (2) local newspaper clippings; and (3) contacts with persons knowledgeable about the occupation. The extent to which various sources are used is illustrated in Table II. The data on sources were compiled during a quarter when greatest attention was given to information items that vary among geographic areas. The Table illustrates the relative importance of various sources in updating occupational information topics. For example, development of employment prospects information required greater consultation with knowledgeable persons and unprocessed sources than with standard published sources. This illustrates the point that the standard research output provides answers to many information development questions; however some can only be satisfied by customized inquiries. Even when employment forecasts are available, the current outlook is known for only a few occupations. To determine the current outlook, it is often necessary to examine unprocessed data and tap informed opinions.

On the other hand, the table reveals that reliance on knowledgeable persons and unprocessed data is less necessary with other information items such as current employment and wages. Two major data needs are worth discussing in detail. One concerns information on local and state current and projected employment by occupational specialty (6 digit D.O.T. code equivalent). Such data available for Lane County and the State of Oregon vary from one to five years old. The first results from the new Occupational Employment Statistics surveys giving current occupational employment in manufacturing industries were made available in 1974, but will not be available for employment in non-manufacturing trade and government service industries until 1975. The first projections for occupational employment in manufacturing will not be available until 1976. All of these target dates assume no further staff cuts or major work load increases on personnel of the Research and Statistics Section of the Oregon Employment Division and a continuation of the present federally directed O.E.S. program.

TABLE 2

Data Sources Used for Updating Descriptions
Sample Quarter, 1972

Sources	Information Topic			
	Employment Prospects	Wages	Current Employment	Training
Number of Occupations Updated	88	31	21	13
Published Data				
Employment Division	15	2	21	--
Bureau of Labor Statistics	36	7	2	--
Miscellaneous Wage Surveys	--	6	--	--
Other Published Sources	8	0	5	4
Unprocessed Data				
Job Bank Opening Summary	14	8	--	--
Other Unprocessed Sources	3	0	2	0
Knowledgeable Persons	71	2	0	9

A second data need concerns information on supplies of trained manpower. Some such data are becoming available for a number of occupational groups as a result of the efforts of the educational planning agencies. Nevertheless, substantial data gaps remain. A subject for which there is small prospect for early improvement is geographic migration. The limited information available is obtained from the decennial federal censuses of population. The time spans between such censuses, however, are great.

In summary, standard published sources provide answers to a large number of research questions. Alternative sources of information such as knowledgeable persons and unprocessed data must be used when the standard sources are inadequate. Most frequently this is the case when highly local information or information with a short useful life is needed. Currently, greatest needs are for data about occupational supply, wages, current and projected employment, hiring requirements, and training sources.

Formats

Formats of standard published sources vary from highly technical reports to materials developed for career planning purposes. In part, the origin of CIS was based on the observation that a great deal of the best occupational information is published in technical formats that are often too detailed and neither appealing nor accessible to most users.

A different format problem encountered by CIS using some published information is the lack of technical notes accompanying the data. For example, the usefulness of some wage studies is limited by the lack of occupational definitions. One reason such problems arise is because a great deal of data useful in occupational information is generated with other purposes in mind. To increase the value of this information, CIS has developed forms for common data sources which pose pertinent questions. Several of these forms are described later in this chapter and exhibited as Appendix G.

Much useful information is largely unprocessed. Help wanted ads and articles in newspapers are examples. Currently CIS scans local newspapers in geographic areas. This is done by coding pertinent articles and advertisements by the occupational classification system. The data have two uses: 1) it provides information for analyzing occupational supply or demand and 2) it provides names of "knowledgeable persons" for a variety of occupations.

More thoroughly processed is the Job Bank Openings Summary. Additional processing is done to develop time series for occupations for which job orders historically have been greatest. Some care and supervision must be exercised in using this JBOS data in order to avoid misinterpretation and to place it in its proper labor market perspective. Other data come in tabular form ready for use by a researcher familiar with the source but obscure to most others.

In summary, useful data comes in a variety of formats. With the exception of information developed expressly for occupational information purposes, most requires some additional processing.

Frequency of Information

Information is developed by organizations and individuals at both regular and irregular intervals. Organizations such as the Bureau of Labor Statistics, whose primary objective is to publish information, adhere to the most regular schedules. Other organizations, such as employment agencies, whose information development responsibility is one of many, publishes some of its information, like labor market letters, at regular intervals but other information,

like occupational information, at less regular intervals. Shifting priorities and budget allocations seem to be responsible.

Many other organizations without an explicit information development responsibility produce data even less regularly. However, through informal and systematic arrangements and searching procedures, impressive amounts of information can be unearthed.

Another aspect of information frequency is the timeliness of data. Sometimes information is too old to be of much value by the time it is published and released. This is most often the case when the information is highly perishable such as wages, and when it is published in formats that require lengthy preparations.

Geographic Scope of Data

Some information items vary between geographic areas while others do not. For information items that fall into the latter category, data developed at the national level is used and preferred for reasons of efficiency. There is usually an adequate amount of data to meet these information needs. Topics that vary among labor market areas requires data that is usually developed at the local level. Rarely, however, is this data completely available. An example is wage information. It is sometimes possible to use and customize national and state data in these instances. Sometimes, national data is compared with local data from the JBOS to verify its proximity to local conditions. At other times, national data is used in the information files and exposed to review panels for review before it is published.

In summary, while methods are available for customizing national data to local areas, the need continues to exist for information produced at the local level.

Data Storage

Information pertaining to the labor market and to education acquired by a CIS must be stored for future reference, but developing satisfactory review procedures and filing systems is difficult. The highly specialized nature and subject relationships of library materials make regular library classification systems such as the Dewey Decimal and Library of Congress inappropriate.

Since the primary interest is occupational, materials pertaining to single occupations or occupation groups can be readily filed with other work papers concerning the occupation. Publications that cover a wide range of occupations, such as area wage surveys, are often best filed under their general headings (e.g. "wages") and referenced in the occupation files. The most difficult classifying problems are posed by studies whose topics are not occupational, such as a study of automation, but which contain specific information about certain occupations. Such studies must be filed under the occupations they discuss or be referenced in those occupation files, or the material will not likely be found when the occupation files are updated. Either approach requires review of the content of the study, not just its title. Finally, there are general references (e.g. Census data, Employment and Earnings,) reports on special labor force groups, data about training programs, and other materials that cannot be classified by occupation but are worth retaining. The newspaper articles or information received by telephone should also be noted, classified and filed.

The library system currently in use in Oregon is found in Appendix F. CIS experimented with the conventional subject card file and title and card file, but these card files proved too costly to maintain and did not fulfill the need for ready accessibility and frequent cross-referencing. Thus they were abandoned in favor of cross-reference cards filed under the various topics where the study might be needed. Currently the task of cataloguing new materials has been assumed by three information development staff on a rotation basis.

CAREER PLANNING INFORMATION FILE MAINTENANCE

This section describes the files in which information is stored for use by students and counseling clients, together with a brief summary of the procedures used to maintain those files.

System Components and Sources

Occupational description file. Since the heart of the information system is the description file, much of the preceding section concerning information sources applies to the descriptions. As mentioned in the earlier section on the "Economics of Information Development," the occupational descriptions consist of 20-25 specific information items that provide the reader with a brief but complete picture of the occupation. They can be separated into two groups, area specific information items that vary between geographic areas and common information items that do not. This separation is useful because it avoids

inefficient duplications of common information when information files are established for several areas.

Of course, needed information is rarely available for all 20-25 information items. When it is not, several alternatives are available. The information item may be judged unimportant and deliberately left out of the description. Or if judged important, national or local data may be customized depending upon the information item.

Descriptions of the information items and analysis and writing instructions are provided in "Format and Instructions for Writing Occupational Descriptions," which is reproduced below.

FORMAT AND INSTRUCTIONS FOR WRITING OCCUPATIONAL DESCRIPTIONS

COMMON INFORMATION

NATURE OF THE JOB

Give a concise statement of the essential function, purpose, or objective of the job. Define the occupation, in terms of its ultimate aim, don't merely describe it. You may include historical background of the occupation.

Describe very briefly, in action terms, the major activities of the job. Note changes that are taking place in job duties. Make clear what occupations are included. Distinguish between this occupation and others. List major specialties.

WORKING CONDITIONS

Describe the environment--physical and organizational--in which the job is typically performed. If possible, describe the types of people contacted in the job, and in what context.

Note unusual work schedules. Note amount of traveling required (nights away from home). Note availability of part-time jobs.

QUALIFICATIONS (In this section, be sure to keep in mind the distinction between what is required and what is desired.)

Native Qualifications: Aptitudes, physical capacities, mental and social requirements, specific physical requirements: climbing, stooping, etc. Note differences among specialties.
Legal Qualifications: Licenses, age, etc.

QUALIFICATIONS (Continued)

Preparation: Education, training and experience required for employment.

Relevant, desirable preparation beyond minimum requirements.

Describe promotional ladders. Especially note situations in which continued employment or promotion require frequent moving.

AREA SPECIFIC INFORMATION

Note local exceptions to "common information" statements.

Legal Qualifications:

Training Sources: List sources of training which are significant in the area.

Employee Organizations: If appropriate, note organizations (unions, etc.) affecting working conditions. Most important when membership is mandatory.

Hiring Channels: Report normal hiring channels, if noteworthy.

EMPLOYMENT AND EARNINGS

Current Employment: Indicate extent of local employment. Note significant seasonality fluctuations. Include self-employed as well as wage and salary. It is not imperative to use numbers. Descriptive terms such as small, large are often useful.

Personal Characteristics: Note personal characteristics (age, sex, etc.) of present employees.

Wages and Supplements: Describe wage rates and wage supplements. The most appropriate figure will usually be a median entry rate. Note income potential (median maximum rate) when known and significantly different.

EMPLOYMENT PROSPECTS

Refer to Demand-Supply Worksheet as a guide.

Note factors determining growth--rising personal incomes, legal requirements, etc. -- include comments about the industries with greatest prospects.

EMPLOYMENT PROSPECTS (Continued)

Describe major supply sources and their trends.

Draw conclusions about the relationship between supply and demand in the past, at present, in the future. State current outlook and describe how it will change. Give reasons for judgment. If appropriate, note differences by specialty. Where possible, note causes of imbalances--lack of training, wages and working conditions, licensing, etc. Keep national trends in mind, and note discrepancies between area and national prospects.

It is often adequate to use descriptive phrases "substantial surplus, etc.", rather than numbers. Note local differences to state and national patterns prepared by CIS.

WRITING STYLE

Writers should keep the following in mind when preparing occupational descriptions.

1. The style should be as clear and straight forward as possible. Although the occupational descriptions serve multiple purposes, they are primarily intended for the use of school counselors, local office counselors, interviewers, students, new entrants into the labor market, and manpower program planners. Jargon, gobbledegook, and cliches should be avoided. A straight forward sentence is preferable to an attempt at cleverness that fails.

2. Always be accurate in what is expressed. Care should be taken with the use of such words as "always," "sometimes," "seldom" "usually," "rarely," etc. All statements must be based on verifiable sources. Statements of opinion should be labeled as such.

3. Omit words which express attitudes unless it is specified whose attitudes are being expressed. Whether or not the occupation is boring or pleasant depends on the individual, not on the occupation. Let the facts speak for themselves, the writer should try not to incorporate his own attitude towards the occupation into his writing.

4. The writer should make every effort not to make the job sound more attractive than the facts indicate, because persons may then be attracted to an occupation for which they are not suited. By the same token, it

should not be made to sound so unattractive that qualified and interested workers are driven away. A happy balance is the goal.[2]

Education file. This file describes hiring requirements for the occupations and lists institutions where occupational training can be obtained. The development of this file presented several problems and prompted CIS to undertake to plan and implement new educational components.

Classification systems are a common source of trouble when working with occupational information. In developing this file, problems have occurred because most educational programs are identified only by title and the relation to occupations is often difficult to infer.

Secondly, the disparate quality of the various schools is hard to ascertain and describe. Information on program evaluation is inadequate.

Finally, information sources are inadequate. Initially, rather than collecting and reading 200 catalogues, CIS tried to locate a reliable secondary source. Though there are numerous publications in this field, most are not accurate or timely. Steps Beyond High School, an Oregon Board of Education publication, has served this purpose best.

The current education file will be replaced by January, 1975, when evaluation and modification of new Education Components will be completed. The new educational components are designed to strengthen several areas in which the present CIS education file and the majority of post-secondary educational materials are deficient. In the state of Oregon as elsewhere in the United States, it is difficult to locate a single source of detailed and accurate information that relates career opportunities to educational programs and the schools that offer them. Current information on post-secondary institutions appears in a variety of sources that are varyingly accurate, complete and up-to-date. Available publications come in a variety of styles and formats which do not enhance consumers' ability to compare institutions and programs.

---

[2]The section on writing style was adapted from The Preparation of Occupational Guides in the Coastal Area of California, State of California Department of Employment Coastal Area Research and Statistics (San Francisco, California, March 1964)

Further, existing post-secondary educational information generally speaks little to the career opportunities generated by attending a particular school or by entering a particular program. Some school catalogs make non-documented references to the career opportunities that supposedly are available to graduates by virtue of completing a specified program. But, those references are usually someone's statements of conventional wisdom and are seldom backed by labor market data. For example, one Oregon university indicates that its history program provides "...a broad foundation for a variety of careers--teaching and research, law, journalism, foreign service, government, business, the ministry, librarianship." The new education components incorporate several important changes from the old Education File. (1) All educational programs are included, not just those that have occupational titles. (2) This expansion requires that educational programs be organized in an educational taxonomy rather than in occupational terms. (3) The introduction of an educational taxonomy into the system permits (and requires) a more complete discussion of the relation between education and jobs in each occupation. (4) Information about costs and services of schools are also presented. (5) Finally, it is based on more authenticated sources.

The educational components consist of three new files: Preparation File, which will discuss ways to prepare for employment in each of the 225 occupations included in CIS and will reference relevant education programs; Program File, which will provide a narrative description for each type of post-secondary educational program (e.g. Biology, welding) and a list of the institutions that offer such programs in Oregon; and the School File, which will provide comparative data on all two- and four-year colleges and nearly all proprietary schools in Oregon.

In the search for data sources, project staff have examined the existing body of accessible post-secondary educational information. The following are examples of some of the project's activities in this area and arrangements which have been made for pooling useable data:

- Reviewed the major institutional directories for ideas for developing the file of institutional information.

- Examined some data from coordinating agencies in Oregon, some of which has been used in component development. Examination results have encouraged agencies to review existing data for applicability to educational consumers.

- Have reviewed school catalogs for reliability and applicability to component development. Have verified some information by calling schools, comparing against other sources, etc.

-Have compiled a comprehensive master list of post-secondary educational programs in Oregon from other less comprehensive listings.

-Have made arrangements with and are receiving regularly master listings of Veterans Administration-approved programs in Oregon's community colleges and proprietary schools for use in updating the master program list.

-Have made arrangements with the State Department of Education to use certain program data that they collect for validating and updating community college program information in the educational components.

-Have made arrangements with the Oregon State System of Higher Education to receive periodic listings of new programs in the four-year public colleges.

-Have made arrangements with the State Department of Education to receive a periodically updated listing of existing proprietary schools.

-Have made arrangements with the Educational Coordinating Council to receive copies of HEGIS Enrollment Reports and Student Enrollment Data Surveys for all two- and four-year colleges in Oregon.

-Have made arrangements with all two- and four-year schools and a majority of the proprietary schools to get selected data directly from them for use in developing the educational components.

-Have developed an Advisory Committee composed of institutional representatives and agency personnel, in part, to assist in identifying reliable additional data.

Writing guides for these components will be prepared at the end of the project.

High School Subjects File. Probably the most frequent request for additional information has come from junior high school teachers and counselors asking for lists of high school subjects that are helpful in preparing for various career fields.

In examining the need, it became apparent that it was not feasible or necessary to list the course titles of individual high schools. Instead, a listing of subjects was developed. Further it became apparent that listings for individual occupations would be too detailed for most junior high school students' career decision stage. The list would certainly contain great amounts of repetition among similar occupations and the information base is inadequate for making such precise statements. Consequently, the lists of high school subjects were prepared

for job families (secretarial, metal working, social service, etc.)

The almost total lack of data on which to identify a relationship between high school courses and occupational success posed further problems. Thus a consensual method was used to tap the opinions of high school teachers, career education curriculum specialists, and employers. During the development of the file, a conscious attempt was made to strike a balance between the strict criterion that high school instruction is essential to occupational success and the loose criterion that high school instruction in a subject might be helpful.

The resulting lists, currently under evaluation, will be available throughout the System during the next year.

Attribute file. This file contains the attribute codes which are used to process the QUEST questionnaire. For each occupation, the file lists the questionnaire responses that are consistent with the requirements of the occupation. While much of this data remains unchanged over time, several factors require that the file be given annual review: 1) When new occupations are added to the System, a set of attribute codes must be developed. 2) Although the attributes for most of the questions are fairly stable, four of the questions are sensitive to labor market changes and the occupations must be monitored for these changes. 3) As new areas are added to the System, another set of attribute codes must be developed and incorporated in the file for the location question. 4) A file containing over 15,000 codes is vulnerable to clerical error.

The most important information source for the non-labor market questions in QUEST are Dictionary of Occupational Titles, Vol 2, and the Job Bank Profile, Master File Listing. Sources used in the examination of the question which pertains to educational and training requirements are GED and SVP items of the D.O.T., Occupational Outlook Handbook, the Manpower Resource of the Portland Metropolitan Area, the Oregon Apprenticeship Manual, and expert observers in various fields; sources used to determine "location" are the Oregon 1970 Census of Population, the Oregon Industry-Occupational Matrix Estimates, manpower economists of the Oregon State Employment Division, and the career education coordinator for a new area to the system; personal job characteristics' sources used are the Oregon 1970 Census and various skill surveys; sources used with entry-level wages are expert observers in various fields, employers, newspaper "Help Wanted" ads, manpower economists of the Oregon State Employment Division, the Job Bank Openings Summary, the Occupational Outlook Handbook, the Manpower Resource of the Portland Metropolitan Area (April 1968), Oregon 1970 Census, and various wage studies.

Visit file. This file includes the names of people in the Eugene area available to discuss their respective occupations with interested individuals. This file is currently available in Lane County.

The file includes the names of nearly 270 persons in over 180 different occupations. This large collection of names was compiled in cooperation with the Rotary Clubs with members of the Rotary Club contacting workers in the occupations and confirming agreements. The Lane Intermediate Education District provided the liaison between the Rotary Club and CIS. CIS provides ongoing file maintenance.

Bibliography and books. This component refers users to the most pertinent general and specific publications about particular occupations. Identification of such sources is a natural byproduct of the development of the CIS library. Identifying attractive, informative, and relatively inexpensive publications to include in the Bibliography File is a fairly simple task. Complications arise when trying to acquire the publications in large quantities. In the past two years, several governmental publications (both state and federal) were omitted from the Bibliography offerings because supplies were not adequate to meet the demand for 350 copies in Oregon. Thus, it is essential to verify that sufficient copies are available before adding a publication to the Bibliography list.

Explorer Posts. The Scouts' Explorer program now has a career orientation, with each post sponsored by a firm or an occupational association and providing opportunities for boys and girls to learn about a career field. This file lists those Explorer posts, their sponsor, and contact instructions. All information is provided by the district explorer offices.

Employer Supplements

There is much about employing establishments that is not adequately described in occupational and educational files, even though there are places in those files where reference is made to employing establishments. These information gaps are generally of two types: information that is specific to the jobs in a particular firm (job titles, entry occupations, etc.) and information that describes the establishment's work environment, irrespective of the particular occupation in which a person works.

Both are readily apparent in U.S. military establishments. While they employ a wide range of occupations, their titles, wages, training sources and other occupationally related matters are peculiar, and so are the overall work environment and conditions of employment.

The fact that the recent move to an all-volunteer-force changes the armed services from a position of legal coersion to a position of competitive employer is additional reason to examine this particular employing establishment, for there is now much confusion about the changed military obligations and opportunities.

CIS is thus undertaking a joint study to obtain objective information for inclusion in the present system and to prepare a printed employer supplement about the Navy. The project is being conducted jointly with Operations Research Inc. of Silver Springs, Maryland, and will prepare and test information about the Navy. The project is being designed to provide information about this particular establishment in an objective manner without over-emphasizing this establishment. It will produce a structure and guidelines by which information about other employers can be efficiently made a part of the information system while retaining the system's impartial character. This project is scheduled for completion in mid-1975.

Information Updating Procedures

The program by which these information files are maintained has two elements, one designed to respond quickly to new information, the other to facilitate systematic improvements. The first element of the information maintenance program is continuous updating of all information files to reflect new information as it flows to CIS from sources such as those described above. For instance when new wage or employment outlook information becomes available, all pertinent computer files are promptly updated.

The volume of continuous updating depends largely upon the flow of information to CIS. Without a strong flow of information, most updating is done during the periodic review. During this process, considerable time is spent locating information materials. As the flow increases, more opportunity arises for continuous updating of information items and less reliance is placed on the periodic review.

The second thrust centers on periodic review of system components and information content, and producing information for new areas. The review cycle on the other hand, constitutes an extensive examination and updating of all files (Education file, Attribute file, Visit file, the Occupational Description file with its common information section and all the area specific files, and the Bibliography file). Each review cycle has certain subjects for special attention, such as area specific information for a new area, special opportunities for women and minorities, etc. in addition to a general review of all file content. Oregon CIS set its first periodic review schedules for six months. It is in this

connection that the review panels described earlier are used.

Each member of the panel has a slightly different relationship to the occupation (i.e. worker, employer, placement specialist, training representative, expert observer) and is asked to comment from that perspective. Since the descriptions are the heart of the System and can be most easily exchanged through the mail, this is the component which the review panel is most often asked to examine. The comments of the review panel are in turn used to update other System components.

During its first year or two of operation, a CIS is faced with tremendous pressure to initiate files and simultaneously develop area files for several areas of the state. Any change in file format only expands the work load. Staff limitations and all the trials of an initial "run", make it difficult to stay with original time schedules. A recent review of comments returned from the review panels showed that they proposed only minor changes to the description file, even when the file had not received a systematic review for six months. Even the statements pertaining to the severe energy crisis of 1973 still seemed usable and valid a year later.

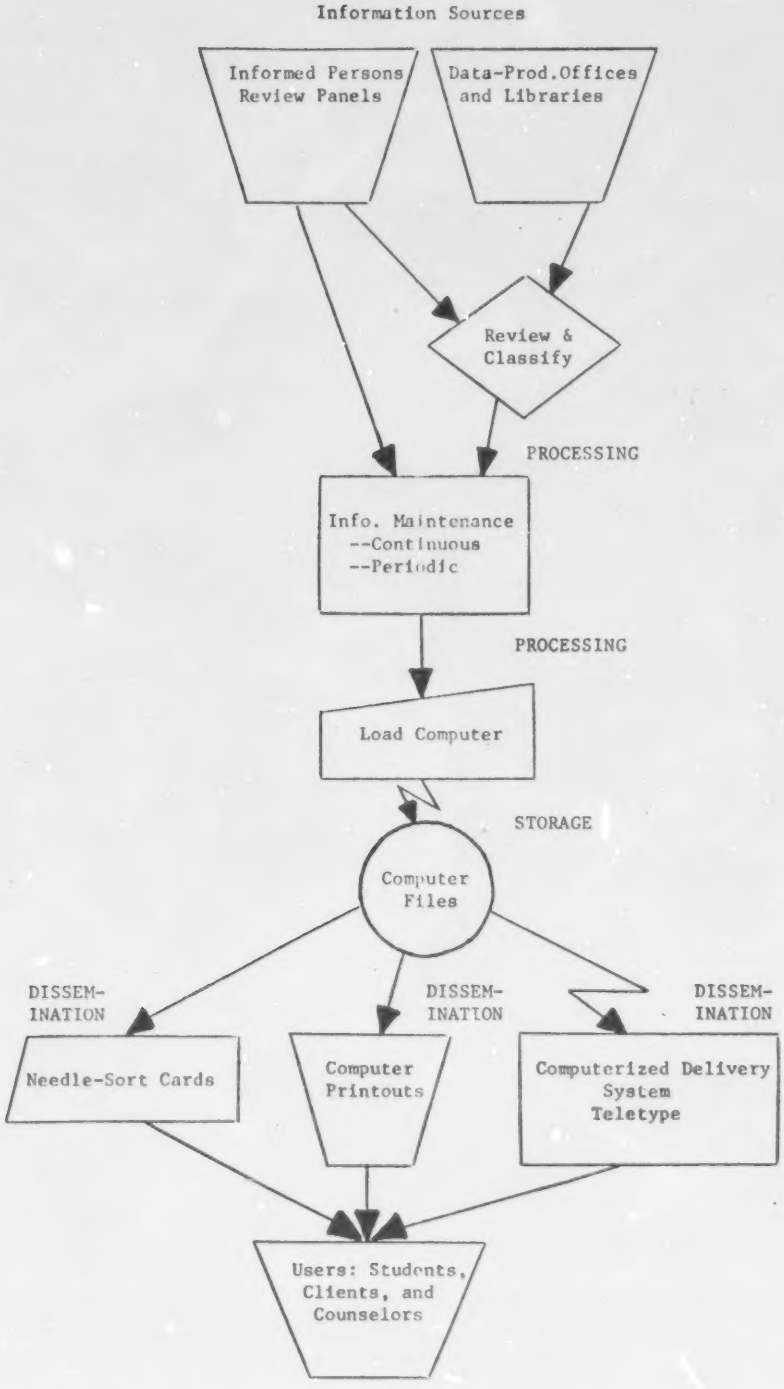
Perhaps less frequent but more extensive review of all the information files will suffice when coupled with regular updating and in-put of new data as it becomes available, particularly for those highly perishable topics such as wages. Theoretically that would allow more time for researching and developing new components, additional occupations and new information to enhance the existing system.

Data Flow Chart

The following chart illustrates how labor market information flows from data sources through CIS to the ultimate users. Broadly, the data sources at the top of the diagram are placed in two categories: a variety of local, state, regional, and national labor market information-producing agencies and organizations and libraries, including educational agencies, which provide educational and training statistics and data concerning educational programs; and the CIS review panels plus various informed persons having specialized or professional knowledge about specific occupations, occupational groups, or general economic factors affecting the labor market. All data from the first category funnel through the CIS library where it is reviewed for utility and appropriateness and the retained materials are classified in accord with the library classification system (Appendix F). Information originating in the second category of data sources is normally obtained on request of a CIS staff member and the response goes directly to him. Records from these sources are sometimes made and filed with other information about the topic at hand.

Career Information System

INFORMATION FLOW CHART



Information sources are also used for consulting with and preparing reports for program planners.

The functions and procedures for development of the career information were described earlier in this chapter and are graphically portrayed on the left side of the chart. The symbol labeled "Information Maintenance" represents the intensive processing stage at which the data in the computer storage files is reviewed, revised, and updated on the basis of the latest information stored in the library and information received from the review panels, etc. From that point the processed data is delivered via electronic/mechanical means to user agencies, their students and clients.

The series of steps whereby program planning information is developed and delivered are described in some detail in a separate volume. The flow chart illustrates the process involved in responding to a major data request from an educational program planner; the handling of the simpler data requests of course frequently eliminates some of the steps shown on the chart.

In all three sections of the chart, attempt is made to indicate in summary form the usual storage, processing, and dissemination steps of the Career Information System.

Instruments for Information Development

Certain instruments have been developed to assist the process of information maintenance. A short description and evaluation of each of the instruments is provided here; copies of the instruments appear in Appendix G.

"Format and Instructions for Writing Occupational Descriptions." (Reproduced elsewhere in this chapter.) Description: This outline sets forth instructions and sources for writing descriptions according to the CIS format. Review draft was developed for manpower economists and others assisting in information development.

Evaluation: Instrument has been very useful with new employees in acquainting them with methods and sources. Value with manpower economists has been limited by lack of cooperative agreement.

"Demand-Supply Worksheet for Specific Occupations." Description: This sets forth definitions, instructions and sources as well as worksheet which could be used for developing estimate of current employment outlook.

Evaluation: Worksheet cannot be used explicitly because of lack of readily available supply data. Nevertheless, the definitions are very useful in thinking through estimates of employment outlook without data. Useful in training new employees.

"Occupational Specialties Worksheet." Description: Used to summarize worker traits, attributes and some labor market aspects of occupational specialties that comprise an occupation in the Career Information System. Developed

for the purpose of reviewing attribute file for an occupation and breaking out new occupations. Uses worker trat and labor market data for highly detailed occupational specialties.

Evaluation: Instrument proven useful during a review of all non-labor market questions. Provides a record on which to question validity of attr ibute codes. Also useful in analyzing similarity of occupational specialties grouped together.

"Occupational Description Source Record." Description: Instrument is used to record the sources on which information in the description is based.

Evaluation: Instrument has proved to be increasingly useful for answering questions about data sources as well as providing continuity and sources for subsequent updating.

"Source Notes." Description: Instruments are used to record pertinent details about raw data gathered from professional associations, licensing board, etc. Developed because these details rarely accompany such materials but are necessary for interpretation of such data in labor market terms.

Evaluation: Proved useful when gathering a larger number of materials, but resources have not always permitted such extensive materials gathering.

"Information Item." Description: Instrument was designed to provide a corss reference to data sources not stored in the occupational files.

Evaluation: Instrument has proved useful in identifying data sources such as articles and reports shelved in the library.

From the experiences acquired in reviewing files and submitting the descriptions to the review panels, certain observations came through clearly. The review is an efficient method for examining all System components for these occupations simultaneously. For example, wage information was examined and updated simultaneously in the description and attribute files, insuring consistency.

In distributing the descriptions to the review panels, it became clear that a procedure for monitoring responses was needed. About half of the respondents will reply promptly, while the others are slower to respond. Generally, the manpower economists and placement specialists with the Employment Service return their comments within the shortest space of time. When the manpower economist and placement specialist are located within the same local office, they frequently discuss the information contained in the description, a fortunate side effect of the procedure.

Computer Loading

For career planning information updating, CIS has developed a standard procedure for updating the files stored in the computer. After files have been reviewed, new or updated statements are developed and recorded on a form that indicates explicity choice of language and location of new information within the various files. A specially trained secretary then types the information into the computer, using the specially prepared "update" computer program.

While deadlines have precluded extensive experimentation with the periodic review, this situation has served to re-emphasize the advantages of such a systematic approach. The experience of the last year strongly suggests that the periodic review results in greater integration and consistency of System components. The description file, attribute file, and education file for an occupation can be examined together to check for consistency. Furthermore, the periodic review incorporates the advantages of planning while remaining flexible enough to permit some adjustments in objectives as it becomes necessary. These procedures require well-trained labor market analysts. It would be erroneous to believe that these procedures could be implemented by staff members without backgrounds in labor market analysis. Reliance on information developed by other agencies and individuals requires a high degree of expertise so as to perceive the limitations of existing data and the pertinent questions to ask. In effect, the procedures make it possible for competent analysts to develop more information at a higher level of quality than would otherwise be impossible. Any organization intent upon developing occupational information will have to bear in mind this manpower requirement when planning future system developments.

EVALUATION OF INFORMATION CONTENT AND TIMELINESS

There are several methods for evaluating the content of the Career Information System. One method is to gather and analyze the comments of users; another is to compare the content of the information system with a model information system. Both of these approaches will be utilized.

User Satisfaction

Evaluation and pilot testing of the occupational information delivery system have closely examined user satisfaction with the information contained in the System. It is important to note that user satisfaction with the information is really a judgment about System process as well as information content and format. The timeliness and pertinence of the information for a particular user partially depends upon the attractiveness of the process for obtaining the information.

When students at Churchill High School were asked to assess the CIS occupational descriptions, 95 percent rated them as "accurate and up-to-date," 81 percent reported that they "related the job to my own interests, values, and abilities," 67 percent rated them "complete (covered all important topics)," and 95 percent rated the descriptions "easy to understand." "The feeling that the descriptions are 'easy to understand,' expressed by 95 percent of the high school students who used the System is striking because the material is not easy to understand by conventional readability formula standards."[3]

Responding to the question, "How satisfied were you with the information you received?", 84 percent of Churchill students who used the System indicated they were satisfied with the information presented. Eighty-seven percent indicated they were able to find the information they were looking for.[4]

Similar results were reported with Lane Community College students. When asked how satisfied they were with the information they received, 84 percent of the students were either satisfied or very satisfied with the information delivered by the System.[5]

The vast majority of counselors who have worked with the System have commented positively on the System overall as well as on the accessibility, quality and quantity of the occupational information contained in it. In order to be more specific, the evaluation in the three state Employment Division offices in Portland was designed to obtain highly specific comments from participating counselors about the content and format of the information, especially the occupational descriptions. The following excerpts from the Portland evaluation summarize the counselors' assessment of the occupational descriptions.

> Counselors' opinions of the descriptions were unanimously positive and only a few noted minor deficiencies of content. The three counselors who indicated deficiencies commented that some of the descriptions were not of sufficient depth, that they should be related more to the local labor market, and that the amount of information on schooling included in the descriptions was limited. One counselor thought that some of the descriptions were a little too long, but all others considered the length

---

[3]Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School, Bureau of Governmental Research and Service, University of Oregon, Eugene, Oregon, 1971, pp. 12-13.

[4]Ibid., pp. 20-21.

[5]Larry Lynn Ross, The Effectiveness of Two Systems for Delivering Occupational Information: A Comparative Analysis, Master's Thesis, University of Oregon, Eugene, Oregon, 1971, pp. 66-67.

satisfactory or very good. No counselor had any suggestions for improving style and format of the descriptions or on the procedure for getting them.

All but one counselor considered the information in the descriptions definitely satisfactory. The one counselor who rated the information fairly poor emphasized the geographic factor, saying it was not local enough and not sufficiently current for local needs. This counselor remarked about the almost weekly change of local demands for specific occupations and referred to the sudden but temporary effects of labor disputes on local demand in specific occupations. It is apparent that this particular counselor was giving heavy emphasis to immediate employment opportunity rather than longer range occupational decision making.

Table III reveals that the vast majority of counselors found the content and topical coverage of the job descriptions satisfactory. While they were asked to rate length, they in fact were rating the adequacy of information content for each topic on the list. None indicated that any topics included were superfluous or unduly emphasized.

While the majority of counselors rated content of the job descriptions satisfactory on all counts, a portion indicated their desire to have more information on several topics. With the exception of wages and fringe benefits, counselors were almost unanimously satisfied with coverage of all topics concerned with the nature of the job and working conditions. Like everyone else, counselors commented that they would like to have more localized and more detailed wage rate information.

Qualifications for employment was the area where counselors most frequently and consistently indicated a desire for more information. Qualifications, together with wages and demand provide the information which is not only informative for exploratory purposes, but useful in determining the appropriateness of an occupational choice. (Since completion of the Portland test, additional information on training sources has been developed and included.)

Counselors' ratings and comments on job descriptions pose something of a delimma. While asking for more information on some topics, counselors expressed almost unaninous satisfaction with the overall length of the descriptions. Only one counselor felt they were a little too long. About a third of the counselors asked for additional information on a number of items, without compensating reductions in other items. The fact that a large majority of counselors found the topical coverage, as well as the overall length satisfactory, cautions against wholesale alteration of the descriptions. In drawing conclusions from this test, it is important to remember that the project resources went primarily to delivery system development, not to information development. It is actually quite encouraging that counselors and clients were as satisfied as they were with the information

TABLE 3

COUNSELORS' RATINGS OF TOPICS OF INFORMATION CONTAINED IN OCCUPATIONAL DESCRIPTIONS

Topic	Percent of Counselors Suggesting: More	Same	Less	Drop
Nature of Job				
Function	-	100%	-	-
Job Duties	-	100	-	-
Occupational Specialties	-	100	-	-
Working Conditions				
Current Employment	8%	92	-	-
Employers	-	100	-	-
Work Environment	8	92	-	-
Work Schedules	-	100	-	-
Organizations	-	100	-	-
Wages and Fringe Benefits	23	77	-	-
Qualifications				
Native Qualifications	31	69	-	-
Legal Qualifications	23	77	-	-
Education, Training, Experience	38	62	-	-
Training Sources	31	69	-	-
Hiring Channels	31	69	-	-
Promotional Ladder	31	69	-	-
Employment Prospects				
Demand	31	69	-	-
Supply	15	85	-	-
Supply/Demand	15	85	-	-

content of the information files during the test. The quality of the information content can be expected to rise when the system is implemented permanently and information is maintained over a longer time period by means of a more consistent and sophisticated information development program. Improvements in information on a number of topics have already

been made and included.[6]

The detailed comments of counselors on the job descriptions point at the fact that information content and format are highly satisfactory in their present form. Information now available in the education file was a frequent request of users. Development of an information component which would relate high school courses to careers or occupational clusters has been developed and pilot-tested in the Portland metropolitan area and will be available on a state-wide basis to users by Fall, 1974.

Evaluation by School Staff

Another opportunity for gathering evaluative comments occurred during May and June 1972 when the Lane Intermediate Education District and the Career Information System called a meeting of all school coordinators at which they were asked to record their reactions to the System.

In addition, questionnaires were sent to coordinators in the schools who did not attend the meeting. In all, the System was used by about 7,000 students in these schools that school year.

Respondents by no means limited their comments to the informational content of the System. Rather, they looked at the information system as an operating program. Thus, their comments cover a wide range of topics from log-in procedures to terminal location to time allotments, but some of the comments pertain to information content.

Comments of this kind can be very useful, in as much as they record the opinions of people who are actually using the System. Of course, comments of this kind are likely to include comments on topics about which the respondent is not well qualified to speak. For example, user reactions are not the best measure of accuracy of information; nevertheless, it is extremely useful to know if users are generally confident, ambivalent or distrustful about the content of the information system.

A summary of all the comments and suggestions made by coordinators, including those comments which pertain to the content of the information system are listed below under the appropriate question.

---

[6]Jerry Weick, Occupational Information for Employment Service Counseling: An Evaluation of Occupational Information Access System Pilot Use in Three Portland Employment Division Offices, University of Oregon, Eugene, Oregon, 1972, p. 16.

What changes in the OIAS need to be made before it can be effective?

There were several criticisms of the unreliability of the computer, a problem that has since been solved by conversion to Hewlett-Packard computers.

Some schools are unable to use terminal as much as they would like for OIAS, due to conflicts of time with problem solving and records use, difficult access to terminal (too far away from classroom, etc.), or problems with secretaries who do not want students using "their" terminal.

Only three of the 18 questionnaires made comments pertinent to information development. This comment was returned by a junior high school coordinator.

> ...The vocabulary is somewhat difficult for Jr. High students. Teachers need to be aware so they can fill in the gaps. I had a whole class of 8th and 9th graders that didn't know what a BS degree was. The best answer they would come up with is that you do through college as a bachelor.
> (This has since been relabled as a four-year college degree.)

This comment was returned by the coordinator in a senior high school.

> ...Expand the System (Education file, High school courses)
> ...Military File (Another facet of career decision-making)

This comment was returned by the coordinator in a senior high school.

> ...More audio (or visual) accompanying materials. (Tapes, etc.)

What things should be considered before implementing the OIAS? What decisions should be made before implementing the OIAS?

This question prompted several suggestions for improving management of the system (schedule of available time, terminal location, training secretaries in its use) and improving instructions for use of the system.

There were really no comments directly pertinent to information development that accompanied this question. However, some thought that descriptions of jobs should be available as printed materials, so students could refer to them again without using the terminal. One coordinator from

a senior high school made the general suggestion

> ...Perhaps we should ask the students who have used it for in-put to these questions.

What positive things about the OIAS have you experienced? What's good about the OIAS?

There were several comments about the system's motivational effect on student interest and awareness of occupational information and parents' endorsement of the system.

The largest number of comments pertinent to information development accompanied this question. Nine questionnaires contained these comments. One was returned by a junior high school coordinator.

> ...The OIAS seems to keep up to date. It tells you where to go for more information.

Another comment came from a senior high school coordinator.

> An increase of interest in the students in jobs and the world of work. A great variety of students came in all the way from college bound (professional) to the ones having difficulty getting through high school. ...It seem (sic) to give concise information that was understanding (sic) to all of the students.

This comment came from a senior high school coordinator.

> Some students have talked with people "in the field" as recommended by OIAS and have reported success. Even when the list was not what a student thought he wanted, it encouraged him to analyze his responses. (Salary, education, etc.) I like it. Students begin thinking about careers. They become aware of a number of different career possibilities. The information given pertinent to the local area: A more realistic approach for the students.

The other comments came from coordinators who did not identify their grade level.

> Kids are motivated easily to use it and often take the results home to discuss with parents.

Students like to use the terminal and feel the information is personal and important to them. They come back to re-use the terminal to get additional information not received on the first usage.

Information received is current and valid.

Students end up with a more realistic view as to what particular jobs are like and how many job types are available in our own area.

(I) feel printout is essential. Many students take printout and for first time they will discuss possible plans for their future.

Increased use of occupational files. Increased awareness of jobs that are available (increase personal horizons). ...Curriculum committee was impressed with the OIAS.

High interest by students in both using the terminal and information received. Parent interest results... Current information.[7]

Since these evaluations, CIS has tried to respond to the criticisms and suggestions while preserving the attractive aspects of the system. For example, as mentioned previously, CIS has now changed to a computer where down time is less frequent. Furthermore, new computer programming and more explicit instructions to users through in-service training and User's Handbooks have improved the speed and efficiency of questionnaire processing and communications. More attention has been given to the location, operation, and availability of the computer terminal.

With respect to the information in files, CIS has developed the education file. CIS continues to update its information files continuously. It has added occupations to the System which increase the occupational coverage of the System. During each review, employment prospects and wage information receive particular attention. At the same time, the need for concise information must be respected.

---

[7]Bill Manley, Summary of Comments and Suggestions Regarding OIAS. Lane Intermediate Education District, May 31, 1972, p. 1-2.

A PLANNED LABOR MARKET DATA SYSTEM

It is apparent from the above discussion that reasonably satisfactory results in providing information for career planners can be achieved by CIS' use of available data and low budget efforts to get around severe data gaps.

The limitations of available data are apparent to every user of such data, whether professional program planner, administrator, counselor, student, or job seeker. The inadequacies have been commented upon in a number of recent studies and remedial actions in the form of comprehensive data systems have been proposed. One question about such proposals is whether a comprehensive system designed for program planning and administrative use would substantially simplify the work of a career information system.

The criticisms by agency planners and administrators were amply documented in Margaret Thal-Larsen's study of the San Francisco Bay Area's labor market information system.[8] She found administrators in the employment security agency, schools, and poverty agencies grossly dissatisfied with their available information resources, whether job opportunity information, job prospects information, demographic and economic information, or information about agency operations, including their own.[9]

Of major importance here, she also found among agency personnel the belief that a data system should emphasize not the needs of agency administration and program planning, but career planning and job seeking:

> ... respondents drawn from all classes of users tended to focus on their belief that a principal, if not the principal objective of a comprehensive labor market information system should be to obtain better means than we now possess of advising youth about the world of work. And quite uniformly, these respondents believed that the priorities shaping the encountered system have accorded little importance to this goal.[10]

Thus it is useful to compare Thal-Larsen's model system with CIS experience, both because it is agreed that a designed system should serve both individual and

---

[8]Margaret Thal-Larsen, with Stephen Laner and Donald Mayall, Requirements and Design of a Labor Market Information System for a Large Metropolitan Area, Human Factors in Technology Research Group, Department of Industrial Relations and Operations Research, University of California, Berkeley, November 1972.

[9]Ibid., pp. 121-136.

[10]Ibid., p. 26.

institutional needs and because the greater knowledge of institutional needs means that designed system probably reflects insitutional planning and administrative needs better than those of a career information system. Thal-Larsen's model contains the 28 elements listed below, with definitions for each component, its purposes, adequacy of the encountered system, design considerations, source data, data format, output format, mechanisms for handling and evaluating the data and cost estimates.[11]

The following table compares those components with current CIS activity.

TABLE 4

Thal-Larsen's Model Labor Market Information System and CIS Data Needs

Components	Comments Regarding CIS Use
Information About Jobs-Microdata	
1. Locational and Identifying Information by Establishment	(job search information) not available; of internal use only
2. Establishment Employment by Industry	not available; of internal use only
3. Establishment Employment by Occupation	not available
4. Establishment Potential for Employment of Special Worker Groups by Occupation	available informally only; desirable for statements about special opportunities
5. Establishment Labor Demand by Occupation	not available; useful for estimating occupational totals (macrodata)
Information About Jobs-Macrodata	
6. Distribution of Total Employment by Occupation	partially available from OES; highly valuable; currency, occupation totals, area detail needed

[11]Thal-Larsen, Labor Market Information System, pp. 175-310.

TABLE 4--Continued

Components	Comments Regarding CIS Use
Jobs-Macrodata--Continued	
7. Characteristics of "Typical Job" by Occupation	(This component is a composite of many topics.) Some topics are available from formal data sources, others informally, some not at all. All highly desirable, more would be delivered if available
8. Indicators of Labor Supply by Occupation	(Component incompletely defined.) very incomplete data available; essential topic; informal approximations must be made
9. Characteristics of "Worker Customarily Hired" in the Occupation	minor portions available, mostly informally; highly desirable, useful information for delivery
10. Indicators of Labor Demand/ Supply Relationships by Occupation	essential information for analysis and direct delivery; estimated by CIS
Job Prospects	
11. Anticipated Short-Term Total Labor Demand by Occupation	essential in some form; available only informally for analytical use only
12. Anticipated Longer-Term Total Labor Demand by Occupation	essential in some form; partial data available
13. Probable Changes in Characteristics of the "Typical Job"	highly desirable; limited mostly informal information available
14. Probable Changes in Characteristics of "Worker Customarily Hired" in the Occupation	highly desirable; not available; would deliver if available
Community Demographic Information	
15. Current Annual Estimates of the Population by Specified Area	incompletely and irregularly available; valuable for internal use only, partially in approximating Job Prospects topics

TABLE 4--Continued

Components	Comments Regarding CIS Use
Demographic Information--Continued	
16. Current Annual and Quarterly Estimates of the Labor Force by Specified Area	only totals available; desirable for internal use
17. Indicators of Manpower Service Needs by Specified Area	not available; desirable for internal use
Community Economic Information	
18. Community Employment Trends	available through CES; internal use only
19. Community Industrial Development & Economic Outlook	incompletely available from newspapers, economic development reports; essential analytically
20. Longer-Term Employment Projections by Industry, Including Assumptions	irregularly available; of indirect analytical use only
21. Community Wage Rates	inadequate; highly valuable for analysis and direct delivery
Community Facilities, Organizations, and Programs	
22. Training Opportunities by Occupation	Compiled by CIS from agency reports and institutions; essential for educational components
23. Apprenticeship Opportunities by Occupation	mostly available; valuable analytically
24. Licenses, Credentials, certificates	licensure information available; essential
25. Employment-Related Supportive Services	available in some areas; not currently delivered; desirable
26. Unions	mostly available; useful for direct delivery
27. Hiring Channels	available only in isolated cases; delivered directly when available
28. Community Commuting Patterns and Transportation Facilities	not available; job search information; not currently delivered

CIS experience is highly consistent with Thal-Larsen's findings. Almost no components are completely and readily available although useful, if fragmentary data are available on most topics. Some components are so essential as to require approximations when data are not available. (Fortunately such procedures are tolerable for career planning information when they would not be for program planning, because career planning information requires less quantification.) Finally, there is the anticipated consistency between data needed for a career information system and that needed by program planners and administrators.

SUMMARY

This chapter on information development has dealt with the topics of economics of information, information sources, data storage, career planning, information file maintenance, manpower requirements, and evaluation of career planning information content and timeliness. As the title indicates, some subsections deal exclusively with career planning information; others (such as information sources and data storage) have a more general orientation to both career planning and program planning information.

The chapter describes some systematic procedures for processing and utilizing occupational information. Evaluations of the Career Planning information components indicate that procedures are workable and the output well received, but many refinements and much work remain to be done. The centrality of information development to a CIS cannot be emphasized too strongly.

Chapter IV

CAREER INFORMATION DELIVERY SYSTEM

There are many weak points in the delivery of occupational labor market information to individuals planning their careers, but perhaps the most severe weakness is the almost total lack of efficient, functional, attractive systems by which those people can access comprehensible information in forms, places, and times that are appropriate for them. It is an often neglected fact that information is of no effect unless it reaches decision makers, and individuals currently have limited options for obtaining occupational information. They can try to see a counselor, if they are fortunate enough to have such services available at all; they can write away to a professional or trade association for promotional literature; they can try to choose a current and factual source in an ill-stocked library; or they can forget the whole information gathering exercise as more trouble than it is worth and simply "ask around." The latter option may in fact be the rational choice; in any case it is the predominant pattern, as many studies testify. In attempting to systematize the delivery of information, CIS has given explicit attention to both the information itself and the vehicles by which it is delivered. The subject of this chapter is the delivery system used to provide access to the information by individual career planners.

NECESSARY FEATURES OF AN INFORMATION DELIVERY SYSTEM FOR CAREER PLANNING

To be an effective aid for individual vocational planning, a career information delivery system should posess some fairly well-defined capabilities. A careful review of the literature reveals the following characteristics of an ideal occupational information delivery system:

1) Make information accessible to persons of varying ability and experience.

2) Provide a means for integrating occupational information with clients' interests, values, aptitudes, and abilities.

3) Use the media that are most appropriate for the particular kinds of information.

4) Display and/or deliver information in an attractive manner.

5) Provide accurate and current information, including capacity for updating.

6) Supply local as well as national data.

7) Provide information concerning a wide variety of occupational groups.

8) Include such specific information as: (a) job duties, (b) work environments, (c) hiring and training requirements, (d) terms of employment, (e) hours, (f) current labor market situation, and (g) long-range outlook.[1]

9) Function efficiently.

It is apparent from this list of specifications than an adequate information delivery system requires certain standards for information content, e.g., timeliness, localization, comprehensiveness, as well as certain standards for the delivery mechanisms, e.g., accessibility, multi-media, attractiveness, efficiency. With the importance of delivery mechanisms in mind, a Career Information System must continue efforts to build and manage an efficient and effective system for delivering occupational information to persons making career decisions. In Oregon, CIS has relied heavily, though not exclusively, on some of the delivery system components from the Occupational Information Access System.[2] Extensive pilot testing in a variety of settings has resulted in continuing refinements and modifications to those components and an accumulating body of evidence establishing this system as an attractive, effective, and efficient means of delivering occupational information to a diverse range of clients.

This delivery system was designed with four objectives: (1) to emphasize the labor market information content of the System; (2) to make a variety of information system components available to persons of varying needs and

---

[1]Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School, Bureau of Governmental Research and Service, University of Oregon, Eugene, Oregon, 1971, p. 11.

[2]Occupational Information Access System is the computerized information program operated by CIS. Much of the system evaluation was done under the title "OIAS."

abilities; (3) to adapt the System to the programs and resources of schools and agencies; and (4) to work toward systems that are usable independently or as a part of the counseling or instructional process.

CIS currently manages two versions of the delivery system, (though many variations of each are possible). One version, the computerized system, utilizes a teletype terminal as the primary medium; the other version, the occupational needle-sort, substitutes a needle-sort card deck and computer printouts for the terminal. While both versions use the QUEST questionnaire, their difference lies in the procedures for obtaining the list of occupations and the occupational descriptions. With the computerized version the user types in the code word, "DESC," and the occupational code number. The computer in turn prints out the requested occupational description. With the needle-sort system the user turns to a bound printout of occupational descriptions which are arranged in numerical sequence. The occupational descriptions in the computer version can be easily updated; whereas, the currency of the descriptions in the needle-sort system is dependent upon the frequency of producing new printouts of descriptions. Currently, three updated copies are issued annually. The delivery system components used by a particular institution are determined in consultation with the institution's staff and in consideration of client needs and institutional resources.

The purpose of this section of the evaluation report is to recapitulate the available information about the delivery system components' effectiveness.

THE QUEST QUESTIONNAIRE AND LIST

The QUEST questionnaire and list process is the means used by most people to access the occupational information produced by CIS. The QUEST questionnaire aids a person in completing the questions and entering his or her responses via a teletype terminal or manually sort a deck of cards.

Completion of terminal usage or card sorting results in a list of occupational titles which serve as a point of departure for further occupational exploration. The QUEST list, whether printed by teletype or appearing on a stack of occupational cards, provides an exploratory base from which the user can examine the consequences of other choices or directly obtain pertinent information from the various information components of the delivery system. The mechanics of the QUEST component's operation are such that clients can operate it without instruction or assistance, freeing counseling time for interpretation and planning. While clients and students enjoy operating the System themselves, it is compatible with counseling and counselors find that it enhances the counseling process.

Rationale and Processing of QUEST Questions

The QUEST list of occupational titles is the product of the individual user's configuration of responses to the 25 QUEST questions, which include the factors of physical limitations, regional location and city size preferences, amount of educational preparation attainable, working conditions, aptitudes, interests, and minimum acceptable salary. Questions pertaining to physical limitations, working conditions and aptitudes are based directly on the classification and relationships between worker trait factors and occupations contained in the Dictionary of Occupational Titles. The rationale of the interest questions is based on the relationships between data-people-things and specific occupations as expressed in the D.O.T. occupational classification system. Standard labor market data sources are used for the factors of regional location, city size, amount of education, and salary.

Processing logic retains the universe of occupations contained in the System except when a user records a response that is demonstrably inconsistent with a factor critical to a particular occupation. If a person gives a consistent response, the occupation is retained. The user can respond to any question with "no preference" or "I don't know," thus effectively bypassing the question and eliminating no occupations. Thus, occupations are eliminated from a person's list of occupational titles only when the user has responded to a question with a definitely inconsistent response, and then only when that factor is critical to an occupation, as determined from D.O.T. worker trait and data-people-things relationships and standard labor market sources.

An extremely important aspect of the QUEST process is a series of exploratory features which permit a user to better understand the processing logic that created his or her list and encourage him or her to modify responses and discover the consequences of those changes. Paramount among those features are WHY NOT and CHANGE. A user can ask WHY NOT to learn what responses eliminated a particular occupation from the list. He or she can use CHANGE to alter responses and obtain a new list. These and similar features make the QUEST process more comprehensible to the user and permits him to examine alternative choices in ways that a single input-single response cannot.

Utility of QUEST Questionnaire

The utility of the questionnaire is a function of its readability and the ability of the user to self report. QUEST is not a test but a tool for occupational exploration. It is "an instrument for recording information

which is presumed to be known to the individual."[3] The real criterion for evaluating QUEST is not whether it predicts or measures, only whether it identifies some new pertinent occupations.[4]

Extensive file testing in schools and social agencies has established the readability of the questionnaire for both disadvantaged and non-disadvantaged clients. "Over 90 percent of the counselors and clients in various schools and social agencies who tested the System rated it easy or very easy to use."[5] In a major test of OIAS in three State Employment offices in Portland involving 267 clients, 94 percent of disadvantaged and 96 percent of non-disadvantaged clients rated the questionnaire easy to read.[6]

"The real test of the questionnaire" is "whether it accurately reflects the client as he sees himself. Counselors who have used the questionnaire say it does, ..."[7] In testing the ability and willingness of the user to self report, there was 80 percent concurrence between E.S. client responses and counselor or GATB assessment of him.[8]

A recent small survey of GATB scores and initial QUEST aptitude responses of about fifty 10th grade students suggests some overestimation of aptitudes in QUEST responses, the same type of error found among Employment Service clients. Disparities of this type highlight the fact that, as noted above, concurrent validity is not the ultimate test of QUEST and they reinforce

---

[3]Bruce McKinlay, Validity and Readability of the Occupational Information "QUEST" Questionnaire, University of Oregon, Eugene, Oregon, 1971, pp. 27-28.

[4]Ibid., p. 34.

[5]Ibid., p. 1-2.

[6]Jerry Weick, Occupational Information for Employment Service Counseling: An Evaluation of Occupational Information Access System Pilot Use in Three Portland Employment Division Offices, University of Oregon, Eugene, Oregon, 1972, p. 16.

[7]McKinlay, Validity and Readability of "QUEST", p. 31.

[8]Ibid., p. 34.

the value of the exploratory features - WHY NOT, CHANGE, etc. - by which a user examines the reasons for his initial list and makes changes to discover the consequences of other combinations of responses.

From field tests it is clear that QUEST does identify new, pertinent occupations. Those who used the System increased their range of pertinent occupational alternatives significantly. In the Churchill High School study, 70 percent of the students who used OIAS reported that the list of occupational titles gave them some new occupations that they would seriously consider for future work. Certainty of students' career plans also increased after using the System.[9] In the Portland evaluation 86 percent of disadvantaged and 90 percent of non-disadvantaged clients indicated that QUEST related jobs to their own likes and dislikes, values and skills.[10] "The vast majority of both non-disadvantaged and disadvantaged clients indicated they received new alternatives and possible new directions through use of QUEST."[11]

A study in one junior high school, where students in a vocational exploration class using OIAS were compared to a matched group of students who received no vocational instruction, showed a statistically significant increase in the number of occupations students in the experimental group were able to list. Students in the class using the System were able to list 34 occupations, on the average, while students not in the class were able to list only a mean of 21 occupations. There was a striking parallel between occupations contained in the System. Thus, it is clear that OIAS, at least when used in conjunction with a vocational exploration class, expands the number of occupational alternatives for consideration.[12] Item-by-item analysis of QUEST questions was a part of the test in ES offices in Portland.

"Counselors were generally satisfied with both content and wording of QUEST questions. A large majority usually favored keeping the questions as worded. None of the questions was found to be grossly ambiguous, misleading, or irrelevant, though some posed more problems than others. No

---

[9] McKinlay and Adams, Evaluation of Access System at Churchill, p. 3.

[10] Weick, Pilot Use in Three Portland Offices, p. 16.

[11] Ibid., p. 19.

[12] Leonard D. Adams and Lawrence K. Fowler, Vocational Counseling at the Junior High School Level, A Case Study at Shasta Junior High School, Eugene, University of Oregon, Eugene, Oregon, 1971, pp. 3-6.

counselor indicated that the number of questions was too large, while six counselors suggested that more questions should be added, either to include or expand upon such factors as interests, temperaments and personality characteristics."[13]

In an earlier test of OIAS in six pilot agencies it was concluded that "the QUEST (questionnaire-list) process for suggesting occupations to consider proved to be effective. Counselors saw the questionnaire as good in itself by clearly stating 'variables' in addition to interests."[14]

Quest List

The relevance of the occupations on the QUEST list and the length of the lists has been evaluated specifically in tests in schools and social agencies. Most lists were of useful length so that, by and large, length was not a problem. The number of occupations remaining on lists averages approximately 30. About two-thirds of user lists range between 5 and 40 occupations. Evaluation indicated that when a person's list was substantially shorter or longer, it often stimulated the user to re-evaluate his responses to the questionnaire and to answer less restrictively or with more precision. The previously mentioned "WHY NOT" and "CHANGE" features are definite aids in this process. The computer program encourages the user to "WHY NOT" for a given occupation which was not listed, and "CHANGE" allows the user to change his or her response to previous questions. The first results in listing the clients response which eliminates a specific occupation, and the second allows a changed response to a prior question.

This tendency of users to re-evaluate their preferences points to a very important conclusion of the Portland study; namely, that "QUEST was creatively manipulated as a tool by the client rather than used in a rigidly mechanical fashion." There was also evidence that clients generally understood QUEST in the content of the occupational decision-making process.[15] "There was no evidence in the responses of clients to indicate that the list was restrictive or taken too seriously."[16]

---

[13] Weick, Pilot Use in Three Portland Offices, p. 16.

[14] Bruce McKinlay and Larry L. Ross, Evaluation of Occupational Information Access System Use in Six Pilot Agencies, University of Oregon, Eugene, Oregon, 1970, p. 6.

[15] Weick, Pilot Use in Three Portland Offices, p. 16.

[16] Ibid., p. 18.

Effect on Client Self-Awareness

One of the unexpected benefits of the QUEST process is its positive affect on user awareness of self in relation to the occupational decision-making process. Users become aware of how their responses to questions affect the range of occupations appearing on their lists. Because the questionnaire reflects users as they see themselves, the process provides the opportunity for clients to test their perceptions against occupational requirements in a non-threatening and experimental fashion. The very fact that many persons using the System perceive new alternatives and possibilities clearly implies an increased self-awareness as well. New occupational possibilities are not considered in the abstract, but are considered as they "fit" or relate to the person considering them. They "try them on for size."

The response of users who find their lists too long or too short is further evidence of increased self-awareness. The common reaction of clients faced with this result is to desire to go through the questionnaire again, reconsider responses, and change them. A clear example in the Adult Opportunity Center was an older women who had reached an impasse in counseling because of the restriction the client had placed on the kind of job she wanted. The counselor suggested she use the System and her initial list contained only one occupation. She immediately saw how much she had restricted herself and became more realistic in her choice process, thus breaking the counseling deadlock.

Results of a pilot test of a small number of residents at Shelton Correctional Institution in Washington showed that the vast majority of users found it helped them think about their own interests, abilities and preferences as they relate to occupations.[17]

Evaluation thus indicates that usage of the questionnaire and list have an educative function which induces self-reflection and awareness of the occupational decision-making process, apart from the occupational information it provides.

Attractiveness

QUEST is a highly attractive way of initiating occupational exploration. Attractiveness of the questionnaire has been specifically evaluated in a number of System tests. Ninety percent of non-disadvantaged and 86 percent of

---

[17] Career Information Usage in a Correctional Setting: A Pilot Test at Shelton Correction Institution, November, 1973.

disadvantaged clients in Portland Employment Service offices indicated that the System was fun to use.[18] In a test of OIAS at Churchill High School 92 percent of the students who used it rated the questionnaire fun to use.[19] These ratings are consistent for all field tests. The QUEST process is effective in producing a list of personally relevant occupational titles to explore, and this feature quite obviously contributes heavily to its attractiveness to the user.

The attractiveness of the System is documented by people's desire to keep their computer printouts. Recently three high schools and one community college where the system receives heavy usage were asked to keep any discarded printouts. At the end of three weeks, there were no printouts available for review because everyone who used the System took their copies of their QUEST responses, list of occupational titles, and printouts of information files. Users view the printout as something personal and it is clear that the hard copy produced by the teletype is an important feature of the System. Those who use the System want the copy to take with them. As indicated elsewhere in this evaluation, high school students tended to discuss their career decision-making and information with parents after using the System. It would be interesting to further investigate the extent to which the printout generates discussion and conversation with peers and parents.

The needle-sort version of OIAS is less attractive because the needle-sort has no medium matching the attractiveness of the teletype terminal. While the card-sort is less attractive than the terminal version, both are effective. In the Portland test, disadvantaged users found the System less attractive than the non-disadvantaged user, but the vast majority of disadvantaged users showed a strong preference for the terminal.

One problem with the original version of the needle-sort was that users are given more information than they wanted. (In that version a job description was printed on each card.) This format resulted in some users giving the descriptions only a cursory review, or not reading the descriptions at all. As noted below, that feature has now been changed.

The card-sort does have several features that are attractive from an operational point of view. It is mobile--it can be used at the counselor's desk or wherever convenient. It does not have the problems associated with terminal usage; that is, there is no terminal noise, terminal down time and and expense of terminal rental and computer time are eliminated. The manual

---

[18] Weick, Pilot Use in Three Portland Offices, p. 16.

[19] McKinlay and Adams, Evaluation of Access System at Churchill, p. 15.

system allows the user to see in detail the results of decisions. For example, a user reporting no plan to complete high school will see the occupations that fall out because of this decision. This was the main advantage cited by counselors from the Portland Employment Division offices.

The current version of the needle-sort system was developed during the Fall of 1972 and is now in widespread use. This version, as with the earlier version, utilizes a card deck with one card for each occupation. Unlike the earlier version, a description is not included on the individual cards. Instead, the cards contain references to the descriptions which are periodically printed out from the computer and bound into a booklet. This assists the user in reading the descriptions, because he or she sees only the descriptions of interest.

Recently CIS evaluated the modified Occupational Needle-Sort System in Career Exploration Classes in two high schools. The classes were described by school officials as not difficult. They were composed of some bright students along with some students who were not highly motivated. A total of 79 students completed an evaluation questionnaire on their use of the System in these classes.

The main reasons for testing the modified Needle-Sort were to determine mechanical ease of usage and to determine the extent to which usage of a manual version results in exploratory activity as it does in the computer version.

Overall, the results indicated that Occupational Needle-Sort usage is highly similar to computer system usage. Students rated the Needle-Sort System as "easy" or "very easy" to use and an effective aid to occupational decision-making. Sixty-three percent of the respondents reported that their list of occupations gave them some new occupations that they would seriously consider for future work. Seventy-two percent of the students responded "yes" to the question: "Did the System make it possible for you to use information that you would not have used otherwise?", and 40 percent said that the system helped them in making occupational decisions.

Ninety-two percent of the respondents used the QUEST component and 40 percent of them found it to be the most valuable part of the system. Eighty-four percent of the respondents used the descriptions; 40 percent of these users found this component to be the most valuable. Even though the Needle-Sort deck and QUEST questionnaire were used by more users than the descriptions, the two components received an equal number of ratings as the most valuable component. The Education and Training List was used by 52 percent of the respondents and 12 percent found this to be the most valuable

component. The Bibliography was used by 33 percent of the users and 8 percent found it to be the most valuable.

For schools and agencies with small user bases or long distances for an OIAS computer facility, the Needle-Sort is an economical alternative. Where large numbers of users desire availability to the System, the computer version is desirable. Finally there is no problem with both Systems being used in the same setting. This has been done and some counselors think it is an even more effective and desirable arrangement than either alone. On the basis of these findings it is clear that the Occupational Needle-Sort System is an effective companion system to the computer version of OIAS. The versions compliment each other and provide versatility in serving schools and agencies.

Efficiency

Effectiveness of the questionnaire and list has a direct bearing on efficiency. Evaluation indicates that savings in counselor time are relatively small when QUEST use is completely monitored by a counselor in the counseling process. However, since it has been shown that System usage expands and enhances the occupational exploratory and decision-making processes, there are quality increases as well as time savings. Counselors tended to take advantage of the increased amount of information available through the System which they would otherwise have foregone or obtained only by spending more time in information collection than they ordinarily spend.[20] In a study comparing OIAS and the conventional, verbal delivery of information in the Lane Community College Counseling Center, results indicated OIAS was at least as effective and definitely more efficient as an information delivery system. Additionally, OIAS was a much less expensive way to obtain and deliver comparable information.[21] "OIAS delivers occupational information of at least equal quality to the Counseling Center in approximately one-half the time per user, at a cost one-tenth or less that of the Counseling Center."[22]

Range of Effectiveness

In the various tests of the System the QUEST questionnaire and list have been used both independently and in conjunction with a counselor as part

---

[20] Weick, Pilot Use in Three Portland Offices, p. 6.

[21] Larry Lynn Ross, The Effectiveness of Two Systems for Delivering Occupational Information: A Comparative Analysis, Master's Thesis, University of Oregon, Eugene, Oregon, 1971, pp. 83-84.

[22] Ibid., p. 80.

of the counseling process. It has been demonstrated to be effective under both conditions, and with widely varying types of clients--youth and adults, disadvantaged and non-disadvantaged, the unmotivated and the highly motivated, bright and articulate college students and slow high school students, as well as people with some idea of their goals and those with no idea what they want to do.[23] In the Portland test, counselors reported that it was not effective with severely disadvantaged clients with little or no reading skills and with clients who were not interested in making an occupational choice. It also appears that persons with very low abilities tend to become discouraged, and probably need extra counseling to make a sound and satisfactory choice. These limitations help delineate the areas of this component's effectiveness and provide guidelines as to which clients should use the System.[24]

Modifications and Further Development

As a result of extensive field testing and evaluation, numerous modifications of the QUEST questionnaire have been made and the development of some revised questions is underway. Because the System is still new, continued research and development is necessary even though implementation is solidly established. Some of the possibilities for refinement have resulted in development of additional selection criteria and operational formats. These test alternatives incorporate the worker trait factors of interests and temperaments as possible substitutes for the data-people-things questions of the present questionnaire. Aptitude and physical demand factors that include all those of the D.O.T. will be tested. Lastly, certain items are specifically designated as strategy questions. Such questions are designed to make explicit the high degree of choice on such factors as location, salary and amount of education a person is willing to obtain, since, in an actual job choice situation, most people are willing to make trade-offs between such factors. Development of these possible modifications is currently underway.

INFORMATION COMPONENTS

Originally there were five information components contained in the System: occupational descriptions, selected bibliography and books, visits, occupational interview cassette tapes, and the education and training opportunities file. While the job descriptions have proved to be the most popular and valuable information component for most users, the other components have been

---

[23] McKinlay and Ross, Access System Use in Six Pilot Agencies, p. 4.

[24] Weick, Pilot Use in Three Portland Offices, p. 11.

considered most helpful by a small but significant portion of users. In the fall of 1973 the interview cassette tapes were removed from the System principally because resources have been insufficient to develop an adequately representative number of cassettes for occupations in the System. However, prior evaluation did include results of usage of all five information components.

Table 5 indicates the relative use of the questionnaire and the information components by Employment Service clients in Portland. The other evaluations have shown similar results. (The education and training opportunities components was developed subsequent to the evaluation of the System in Portland Employment Division offices, so it is not ranked in this list.)

TABLE 5

FREQUENCY OF CLIENT USE OF SPECIFIC INFORMATION COMPONENTS OF OIAS[25]

Component	Frequency of Use	
	Non-Disadvantaged Clients	Disadvantaged Clients
QUEST	100%	100%
Job Description	95	95
Bibliography and Books	29	11
Employer Index*	11	9
Cassette Tapes	6	7

*The Employer Index was developed and implemented only for Portland.

In the remainder of this section each information component will be described and evaluated for attractiveness and effectiveness in delivering information.

[25] Weick, Pilot Use in Three Portland Offices, p. 25.

Occupational Descriptions

Function: To provide a brief statement of essential information about an occupation in easily and readily accessible form.

Form: These concise 300-word descriptions are available in the form of computer printouts for each of the occupations in the System. They describe the function of the occupation, occupational specialties, related occupations, types of employing establishments, working conditions, hiring requirements, licensing requirements, training opportunities, pay, and employment outlook. (See Sample on page 103.)

Performance Criteria: (1) Contain localized information, as well as state and national information; (2) continuously updated; (3) concise (300-word maximum); (4) a description for each occupation in the System; (5) cover a variety of common and area specific information. Common topics include: nature of the job, working conditions, qualifications, and institutional setting. Area specific topics include: local training opportunities, local factors affecting working conditions, ie., unions, etc., normal hiring channels, employment and earnings, and employment prospects.

User-System Interface: First the user determines the occupational title and its numerical code. The user can get the title and code number from his QUEST list or from the alphabetical listing of occupations contained in his user handbook.

When using the teletype terminal, the user enters "DESC" followed by the occupational code number; the terminal responds by printing out the description.

For the manual system, the user locates the descriptions he wants by their code numbers in a bound copy of descriptions. Periodically, CIS has the DESC file for each occupation printed out from the computer; these descriptions are then reproduced, bound in numerical order by occupational code number, and distributed to user sites.

Attractiveness: In a detailed study of the computer version at Churchill High School, "virtually all users said the descriptions were fun to use, easy to understand, accurate and up-to-date. Substantial majorities also said they related jobs to their personal interests, values, and abilities, and were complete."[26] The descriptions were found in all the evaluations to be the most

---

[26] McKinlay and Adams, Evaluation of Access System at Churchill, p. 12.

frequently and most widely used information component. The Portland study found that 95 percent of the non-disadvantaged, and 88 percent of the disadvantaged, clients who used OIAS utilized this component of the System. "When clients were asked to rate which component of the System, including the questionnaire, was most helpful, 60 percent of the non-disadvantaged clients and 52 percent of the disadvantaged rated the job descriptions as most helpful."[27] The great attractiveness of the System "seems to be a reflection of the computer terminal's attractiveness as an information display device that presents only the information requested and provides a copy for users to take with them. The amount of time required for a description to print out (about three minutes) has been criticized by some computer personnel and vocational educators as boring. Students do not agree."[28] Thus both high school students and a range of agency clients, both disadvantaged and non-disadvantaged, are widely satisfied with the content and format of the occupational descriptions.

Effectiveness: As with attractiveness, effectiveness of the occupational descriptions is a function of system process and informational content. A substantial majority of users reported that the descriptions related jobs to personal interests, values, and abilities, and were complete.

"The feeling that the OIAS descriptions are 'easy to understand,' expressed by 95 percent of the high school students who used the System, is striking because the material is not easy to understand by conventional readability formula standards. Research in the readability of OIAS descriptions indicates that the style is probably no easier to read than other standard occupational information such as the Occupational Outlook Handbook...."

"User motivation, the limited length of the material to be read, and the 'liveliness' imparted to the script by the operating teletype seem to compensate for material which is fairly technical in nature and whose style is fairly typical of occupational information."[29]

Counselors, too, were satisfied with the overall length of the descriptions and the topical coverage of the descriptions. In a detailed review of the descriptions, they asked for more information on some topics, notably hiring requirements, but showed overall satisfaction. This appraisal points up the acute need for information, but cautions against any wholesale alterations of descriptions.[30]

---

[27]Weick, Pilot Use in Three Portland Offices, p. 25.

[28]McKinlay and Adams, Evaluation of Access System at Churchill, p. 13.

[29]Ibid., pp. 13-14.

[30]Weick, Pilot Use in Three Portland Offices, pp. 29-30.

Selected Bibliography and Books

Function. Refers the user to important published sources of labor market information.

Form: Originally a selected bibliography page for each occupation in the System. The bibliography page listed books which have information concerning the occupation and the page or pages within the book where the information can be found. Currently the bibliography is a separate file in the computer systems and listed at the bottom of each occupational printout page for use with the Occupational Needle-Sort System.

The set of books contains general sources, i.e., the standard occupational publications, and special sources, i.e., specific publications about training programs, licensing requirements, etc.

The Books are placed near the other components of the System.

Performance Criteria: One bibliography for each occupation in the System (See "Sample Occupational Description" on the following page). Includes only the most important sources. Includes specific, detailed sources as well as general sources.

User-System Interface: The user locates the bibliography for a specific occupation, finds an appropriate reference, and turns to the page in the reference source as listed in the Bibliography.

Attractiveness: For most users the printed Bibliography and Books offered little attraction. "Most clients were satisfied with using the questionnaire, obtaining a list of occupational titles, and getting a few printouts of job descriptions." The Bibliography and Books required looking up references, a step which many clients were not interested in doing. However, while only 16 percent of the clients in the Portland study used the Bibliography and Books, the vast majority of those who did rated it "fun to use" and personally relevant.[31] Computerizing the bibliography has made it more attractive and easier to access.

Effectiveness: The Bibliography and Books are a case where effectiveness is not directly tied to attractiveness. Seventeen percent of clients using it rated this component as the most helpful part of the System in the Portland test. In the test at Churchill High School 6 percent of System users rated the Bibliography and Books as the most valuable information component.[32] The vast majority of clients who used this component found it helpful. Although only a small proportion of clients used this information component, client ratings and counselor comments indicate that it is a worthwhile

---

[31] Ibid., pp. 31-32.

Sample Occupational Description

DESC FOR 1688 KEY PUNCH OPERATORS

TRAINING: AVAILABLE AT HIGH SCHOOLS, PRIVATE BUSINESS SCHOOLS AND COMMUNITY COLLEGES. CURRENT EMPLOYMENT: OVER 2,600 STATEWIDE OF WHICH 1,900 ARE CONCENTRATED IN THE PORTLAND AREA. WAGES: MOST START AT $4,200-4,800/YEAR. EMPLOYMENT PROSPECTS: BALANCE. THE OUTLOOK DEPENDS UPON THE CONTINUATION OF KEYPUNCH AS A METHOD OF DATA ENTRY FOR COMPUTER SYSTEMS, AND TURNOVER OF THE CURRENTLY EMPLOYED. STUDIES PREDICT SOMEWHAT LIMITED GROWTH FOR OPERATORS. CURRENTLY, DEMAND IS STRONGEST IN THE PORTLAND AREA WHERE THERE IS A SHORTAGE OF EXPERIENCED KEYPUNCH OPERATORS. IN OTHER AREAS WHERE DATA-PROCESSING OPERATIONS ARE FEW AND LOCAL TRAINING PROGRAMS ARE PRESENT, A SURPLUS OF TRAINEES EXIST. HOWEVER, LIMITED EARNING POTENTIAL PRODUCES MODERATE TURNOVER IN THIS OCCUPATION AND GENERATES SOME EMPLOYMENT OPPORTUNITY FOR KEYPUNCH OPERATORS WITH EXPERIENCE OR FOR THOSE TRAINEES WILLING TO WORK IRREGULAR HOURS.

'OCCUPATIONAL OUTLOOK HANDBOOK' (1974-75 ED.), PP. 107-108;
'DICTIONARY OF OCCUPATIONAL TITLES' (VOL. II), P. 274

component, and should remain available to that select portion of clients who find it helpful and are able to use it."[33]

Originally, CIS provided user sites with copies of all books referenced in the Bibliography. This was done to increase the prospects of users finding the books referenced. However, it is not uncommon for books to get separated from other system components, so providing copies to schools is no guarantee that they will be available to students. Distribution is also a major task. A substantial but unexpected problem is obtaining adequate copies of publications for distribution. Frequently desirable publications, including those originating in the U.S. Department of Labor as well as in state agencies, are not available in sufficient quantity, so are not referenced.

Visits

Function: To provide personal contact between the System user and a person who is working in a particular occupation, thus giving the user the opportunity for personal discussion with someone in an occupation and observation of work site. (See sample on next page).

Form: The VISIT file provides referral information via the teletype terminal to an individual person working in a specific occupation who has previously agreed to discuss his or her occupation with interested individuals. There often is more than one name per occupation, giving the user some variety of location, firm, and occupational specialty.

Performance Criteria: (1) Report name, title, telephone number, firm name, address, city and contact instruction for each referral. (2) Identify one or more interviewees in each occupation. Seek balance regarding geographic location, occupational specialty, sex, and race.

User-System Interface: First, the user determines the occupational title and its numerical code number. The user can get the title and code number from his QUEST list or the alphabetical listing of occupations. By entering INFO and the occupational code number, the terminal will inform him if a VISIT in that occupation is available. The user can enter VISIT and the code number; if a visit is available, the name and pertinent information of the person to visit will be printed out. If a visit is not available, the terminal will so inform the user.

Users working with the occupational needle-sort find the name and pertinent information of persons to visit entered on the card referring to the particular occupation.

---

[32] McKinlay and Adams, Evaluation of Access System at Churchill, p. 18.

[33] Weick, Pilot Use in Three Portland Offices, p. 31.

Sample Visit Printout

VISIT FOR 4124 FORESTERS

PERSON TO CONTACT:
ROBERT A. HRIBERNICK
FORESTER-TIMBER SALE
PHONE: 687-6572
FIRM NAME:
WILLAMETTE NATIONAL FOREST
210 E. 11TH AVE
EUGENE
SPECIAL INSTRUCTIONS: PLEASE MAKE APPOINTMENT IN ADVANCE
WILL ALSO TALK TO GROUPS IN EUGENE/SPRINGFIELD AREA

PERSON TO CONTACT:
RALPH T. JASZKOWSKI
FORESTER (SILVICULTURIST)
PHONE: 687-6577
FIRM NAME:
WILLAMETTE NATIONAL FOREST
210 EAST 11TH
EUGENE
SPECIAL INSTRUCTIONS: PHONE IN ADVANCE TO ARRANGE APPT.
WILL ALSO TALK TO GROUPS IN LANE COUNTY

PERSON TO CONTACT:
LYNN E. VANCIL
FORESTER
PHONE: 687-6542
FIRM NAME:
WILLAMETTE NATIONAL FOREST
210 EAST 11TH
EUGENE
SPECIAL INSTRUCTIONS: PLEASE CALL IN ADVANCE
WILL ALSO TALK TO GROUPS IN EUGENE-SPRINGFIELD AREA

Attractiveness: The VISITS are not as attractive to users as many of the other components; only 12 percent of the users in the Churchill evaluation made use of them. However, one-third of students who used the VISIT file rated it the most valuable information component.[34] Terminal records and observations indicate that users access the information in this file far more often than they actually make a VISIT. It appears that it takes counselor or teacher encouragement to motivate students and clients to utilize this resource.

There is little difficulty in finding people to accept visits from users. The Eugene area Rotary Clubs undertook, as a club-wide project, the expansion and maintenance of names for users to visit in the Eugene metropolitan area. The Eugene file currently contains names of 267 individuals representing 182 of the 225 occupations in the System.

Visit File Usage

Computer use records show that a third or more of the system users access the VISIT file, while about ten percent of the users actually make visits. Thus, in Lane County where there are 12,000 CIS users, 400 to 500 make individual visits and 1,000 to 1,500 students hear from VISIT file people in groups. There are additional, uncounted telephone interviews.

Questionnaires are sent annually to each person whose name appears in the Lane County VISIT file in an attempt to obtain feedback regarding utilization of the file and to check the validity of file content. In 1973 a total of 116 people (56 percent) responded. About half indicated they had received visits; although some of the rest did comment that they had visited schools and talked with students as the result of their name in the VISIT file. Those who had received visits had talked to one or more students and some had received visits from groups of students. Those responding indicated that almost all appointments were kept. Only four people indicated that an appointment was not kept, and almost nobody complained of being swamped with requests.

Occupations visited most included:

- Hotel and Motel Managers
- Production Superintendents
- Secretaries
- Accountants
- Ecologists
- Sanitarians
- Foresters
- Law Enforcement Officers
- Recreation Program Directors
- Groundskeepers
- Floral Designers
- Photographers
- Welders
- Tool & Die Makers
- Air Traffic Controllers
- Cosmetologists
- Caseworkers

---

[34]McKinlay and Adams, Evaluation of Access System at Churchill, p. 18.

Generally a 30 to 60 minute interview time was satisfactory. Most of the respondents also indicated that the people who visited with them made appointments well in advance, were sincere, and probably learned enough to justify the time spent. Finally, they indicated that the participation of community people in this method of providing career information to students was a worthwhile experience for them. Many of those who had not been visited expressed disappointment but asked that their names remain in the file for the 1973-74 school year.

Work was begun in June of 1974 to make several substantial improvements in the VISIT file. First, many more names are being added with the objective of having at least one resource person for each occupation. Secondly, the computer file will tell the user when visits persons are available to visit the school to talk with groups as well as for at-work interviews. Finally, as new names are added, effort will be made to add persons from outside the immediate Eugene area. Experience indicates that the number of visits per person can readily be kept at acceptable levels by adjusting the number of names in an occupation to reflect the demand.

Local visit files have not been established for other areas of the state as yet, pending the development of local initiative through school districts and/or service clubs, to conduct the necessary community resource survey. Desire for a VISIT file is developing in additional areas during their second or third years of system use, so additional VISIT files will likely be in operation in Oregon in the next year.

Occupational Interview Cassette Tapes (not currently in use)

Function: (1) To help the user understand the affective nature of the occupation from the perspective of someone working in that occupation. (2) To provide a brief introduction to the function, work setting, and major job duties of specific occupations or occupational clusters. (3) To provide information for a person unfamiliar with the occupation or not equipped to handle more abstract information (written descriptions, data, etc.) (4) Useful in presenting occupational information to a group.

Form: Recordings of interviews with persons employed in, or knowledgeable about, an occupation. Postscripts are added to give further labor market information and/or to correct for information bias by the interviewer and to relate the interview to the local area. Postscripts can be deleted and added to meet an area's needs.

Performance Criteria: (1) User operable, with minimal staff control of materials. (2) Average length: 12 minutes.

User-System Interface: The user can see from the listing of available information whether an interview tape is available. If it is, he simply obtains the appropriate cassette from the file and listens to it on available tape players.

Attractiveness/Effectiveness: Testing of this information component has been somewhat limited and results mixed. Initially a significant number of commercially produced occupational cassettes were used, but they proved distinctly inferior to and lacked the credability of those developed by project staff. The limited number of occupations for which taped interviews are available has been a source of user dissatisfaction.

"Some additional evaluation of the interview cassettes was gained when a set was sent to the Tacoma Ghetto Job Information Project. The interview cassettes were reviewed by the Employment Service counseling and job placement staff as well as being tested in some high schools. Employment Security staff felt the tapes would not be helpful with job ready clients, but they did feel that they would be helpful to young entry workers being referred to trainee positions and clients in general during vocational exploration or orientation prior to career counseling.

When the tapes were used in several live demonstrations before high school audiences, students were 'attentive and enthusiastic.' The Tacoma Ghetto Job Information staff said students found them very interesting and helpful and were particularly interested in the economic information provided. This additional test of the interview cassettes confirms the broad appeal of the cassettes in school or other group settings. However, their value in individual counseling seems limited to certain kinds of clients at specific points in the vocational exploration process.[35]

At the present time the cassette tapes are not in use. The staff time required to develop a full library of tapes has not been available, so further development of this component has been deferred.

Education File

Function: To inform the individual where he can receive training to prepare him for a particular occupational area.

---

[35] Weick, Pilot Use in Three Portland Offices, p. 35.

Form: The file includes an initial statement on the relative importance of formal education, apprenticeship training, and on-the-job training as hiring requirements for the occupation. That statement is followed by a list of training institutions, addresses and phone numbers. (See sample.)

Performance Criteria: (1) User operable. (2) Covering all public and private four-year schools, community colleges, private vocational schools, and apprenticeship programs which have occupational preparation as an objective. Listings include all programs in the state, except that others are listed when no programs exist instate. (3) An education file for each occupation in the System.

User-System Interface: First, the user selects the occupational title about which he wants education and training information. The occupational title and code number can be taken from either the user's QUEST list or the alphabetical listing of occupations.

When using the teletype terminal to access the file, the user enters EDUC followed by the occupational code number. The terminal responds by printing the Education and Training file for the occupation.

For the manual system, the user refers to a bound printout of the complete file. Periodically CIS has the file for each occupation printed out from the computer. These files are then reproduced and bound in numerical order by occupational code number

Attractiveness/Effectiveness: This file was developed in the summer of 1973 in response to many requests from teachers, counselors and students. Because of its more recent introduction into the System it has not been fully evaluated. However, the high rate of its use gives some index of its value in the System. One problem with this Education file is the classification of educational programs by an occupational taxonomy. This education information prompted CIS to undertake development of new educational components that will reorganize and greatly expand upon the education information contained in the present education file, and render it obsolete. These new components are discussed later in this chapter. In spite of anticipated change, records of file usage provide an index of Education file usage and thus its popularity.

Statistics Program

This year CIS incorporated a statistics program into the System which anonymously accumulates data on System and file usage by school or institution where the computer version is used. (It should be noted that this program records only total system usage; individuals' records are not retained.) It is now possible to obtain an accurate count of the number of

EDUC FOR 1132 HOTEL AND MOTEL MANAGERS

PRESENT HIRING PRACTICES SHOW THAT EMPLOYERS ARE INCREASINGLY EMPHASIZING A COLLEGE EDUCATION FOR HOTEL & MOTEL MANAGERS. HOWEVER, EXPERIENCE IS GENERALLY THE FIRST CONSIDERATION. IF YOU DECIDE TO TAKE TRAINING, REMEMBER THERE ARE DIFFERENCES BETWEEN PROGRAMS.

TRAINING: PORTLAND COMMUNITY COLLEGE HAS A 2-YEAR ASSOCIATE DEGREE PROGRAM; OREGON STATE UNIVERSITY HAS A 4-YEAR PROGRAM IN HOTEL & RESTAURANT MANAGEMENT.

4-YEAR COLLEGE TRAINING: OREGON STATE UNIVERSITY.

EDUC FOR 3114 TRUCK & HEAVY EQUIP. MECHANICS

JOB SKILLS USUALLY LEARNED INFORMALLY ON THE JOB. THREE TO FOUR YEARS OF EXPERIENCE IS NECESSARY TO QUALIFY AS A JOURNEYMAN. FOR TRACTOR AND HEAVY DUTY EQUIPMENT MECHANICS, THERE IS A FOUR-YEAR APPRENTICESHIP PROGRAM. AN ASSOCIATE DEGREE IN DIESEL MECHANICS IS GIVEN AT OREGON INSTITUTE OF TECHNOLOGY (KLAMATH FALLS), LANE COMMUNITY COLLEGE (EUGENE) AND BLUE MOUNTAIN COMMUNITY COLLEGE (PENDLETON).
THE BEST SOURCE OF APPRENTICESHIP INFORMATION IS THE OREGON STATE BUREAU OF LABOR--APPRENTICESHIP AND TRAINING DIVISION. CONTACT THE FOLLOWING OFFICE NEAREST YOU:
ROOM 301, STATE OFFICE BLDG., EUGENE, 97401, PH. 686-7623
115 LABOR & INDUSTRIES BLDG., SALEM, 97310, PH. 378-3294
455 ELROD, COOS BAY, 97420, PH. 269-1161
130 WEST 6TH ST., SUITE 103, MEDFORD, 97401, PH. 779-0181
120 STATE OFFICE BLDG., PENDLETON, 97801, PH. 276-6131
APPRENTICESHIP INFORMATION CENTER, 1437 SW 4TH AVE., PORTLAND, 97201.
IF THE SIX OFFICES ABOVE ARE NOT CONVENIENT FOR YOU, ANOTHER INFORMATION SOURCE WOULD BE ONE OF THE THIRTY STATE OF OREGON EMPLOYMENT DIVISION OFFICES LOCATED AROUND THE STATE.

Sample Education File Printout

EDUC FOR 9426 FIREMEN.

PRESENT HIRING PRACTICES SHOW THAT ABOUT 95% OF THE EMPLOYERS REQUIRE ONLY HIGH SCHOOL TRAINING TO BE A FIREMAN. HOWEVER, ADDITIONAL FORMAL TRAINING MAY ENHANCE YOUR EMPLOYABILITY, PARTICULARLY FOR SOME SPECIALTIES IN THE OCCUPATION. IF YOU DECIDE TO TAKE TRAINING, REMEMBER THAT THERE ARE MANY DIFFERENCES AMONG TRAINING PROGRAMS. BY VISITING THE SCHOOLS, TALKING TO TEACHERS, STUDENTS, RECENT GRADUATES AND EMPLOYERS, YOU CAN LEARN ABOUT THESE DIFFERENCES. CURRENTLY, THERE ARE APPRENTICESHIP PROGRAMS FOR THIS OCCUPATION IN ALL AREAS EXCEPT LANE COUNTY.

THE BEST SOURCE OF APPRENTICESHIP INFORMATION IS THE OREGON STATE BUREAU OF LABOR--APPRENTICESHIP & TRAINING DIVISION. CONTACT THE FOLLOWING OFFICE NEAREST YOU:
115 LABOR & INDUSTRIES BLDG., SALEM, 97310, PH. 378-3294
455 ELROD, COO S BAY, 97420, PH. 269-1161
130 WEST 6TH ST., SUITE 103, MEDFORD, 97501, PH. 779-0181
120 STATE OFFICE BLDG., PENDLETON, 97801, PH. 276-6131
APPRENTICESHIP INFORMATION CENTER, 1437 SW 4TH AVE., PORTLAND, 97201
STATE OF OREGON EMPLOYMENT DIVISION OFFICES MAY ALSO HAVE APPRENTICESHIP INFORMATION. THERE ARE ALSO FORMAL TRAINING PROGRAMS AT THE SCHOOLS LISTED BELOW.
ASSOCIATE LEVEL TRAINING:
LANE COMMUNITY COLLEGE, EUGENE
PORTLAND COMMUNITY COLLEGE, PORTLAND
UMPQUA COMMUNITY COLLEGE, ROSEBURG
CHEMEKETA COMMUNITY COLLEGE, SALEM
LINN-BENTON COMMUNITY COLLEGE, ALBANY
CLATSOP COMMUNITY COLLEGE, ASTORIA
CLACKAMAS COMMUNITY COLLEGE, OREGON CITY

uses, the frequency of information file and QUEST usage, and the number of times each occupation is inquired. This data collection feature was designed for the twofold purposes of overall system management and as a management tool for each user school or agency.

A summary of use in a sample of junior and senior high schools connected to the Oregon Total Information System Computer showed the following usage pattern.

TABLE 6

Component Usage, Spring 1974

Components Used	Number	Percent
Total Uses	3,479	100%
Occupation Description	3,877	111
QUEST	1,899	55
Education and Training File	1,663	48
Visit File	1,611	46
Bibliography	664	19

First, it is important to note that in one usage a person uses several parts of the System, e.g. by completing QUEST process and requesting information from files or about several occupations. Also note that the program accumulates the data after each usage, not for each user, who typically uses the System on several different occasions.

Table 6 shows high usage of all components, but the occupational descriptions are clearly the most popular. Since the number of uses of the occupational descriptions was higher than the total number of uses it is clear that many users request two or more occupational descriptions and that some users by-pass QUEST and directly request information files. However, a student may have used QUEST at one time and returned to obtain information files only at a later date. It is also noteworthy that the VISIT file received heavy usage this past year. This appears to be a significant increase over the preceding year; although reliable comparison data are not available.

Lastly, the 19 percent usage of the Bibliography is significant since it represents in increase of usage of this component from the time when it was in notebook form during earlier evaluations. Computerization of this file appears to have doubled its usage. Still, there is no way of determining whether users actually read the books referenced in the Bibliography. It does indicate that a significant number of users are interested in the additional information.

EASE OF SYSTEM USAGE

Because this system is an information delivery system, every effort is made to keep its operation as simple as possible--including designing it for client use. Such an approach creates major savings by reducing or eliminating the need for staff monitors. The question is, however, how successful is this strategy? Can people learn to operate the system without training and continuous supervision or assistance? Evaluations with groups ranging from junior high school students to disadvantaged adults indicate that for most the answer is "yes," with a pattern not unlike that for effectiveness where the very young and the severely disadvantaged appear to need assistance. It is not surprising that these results are consistent with the pattern of system attractiveness and effectiveness, for both attractiveness and effectiveness are logically dependent upon ease of system usage. This is especially demonstrable in high school settings, but it also held true in the Portland test in Employment Division offices.

Both the Questionnaire and the Descriptions were overwhelmingly rated "easy to understand" by the students at Churchill High School who used it.[36] The number of students that used it during the five month test totaled half the student body.[37] This is a good measure of ease and attractiveness because students were allowed to operate the system at their own discretion without staff surveillance or prompting. Staff at Churchill reported very few requests for technical assistance.

The Portland test directly investigated ease of system usage. Results were highly consistent for both disadvantaged and non-disadvantaged clients. Both groups reported the QUEST questionnaire "easy-to-read." The same was true for the Descriptions; although a slightly greater proportion of disadvantaged clients reported reading difficulty with them. While ratings on other components were obtained, each was used only by a small self-selected portion of clients using the System, and cannot be considered representative

---

[36] McKinlay and Adams, Evaluation of Access System at Churchill, p. 15.

[37] Ibid., p. 6.

sample of the overall client population who used OIAS. No difficulties were encountered by the majority of clients using these other components.

The Portland test specifically attempted to discover whether clients could operate the System independently. "This was a particularly essential issue regarding the use of QUEST. Results indicate clients are willing, most are able and many prefer to operate the System themselves, with occasional technical assistance required. The Portland test has shown that it is possible to design an occupational information system which clients can operate technically."[38]

CONTINUING SYSTEM DEVELOPMENT

Modification of the existing delivery system components, or development of new ones, is dependent upon testing and evaluation and reports of difficulties or unmet needs from System users. After completion of the major evaluations referred to above, a number of modifications and developments, both major and minor, have been accomplished. Thus, accumulation of evaluative data, feedback from users, and staff experience stimulate adaptations, modifications and further develops in both the quality of the occupational and educational information and the processes of delivering it.

Questionnaire Revision

Testing and usage have pointed out difficulties with some questions on the questionnaire; these have been corrected as they have been identified. The lifting question was the most recent example. Because of the wording and the coding of the question, some System users, particularly girls and women, were overstating their lifting ability and getting inappropriate occupational titles on their lists. By changing the stated weight criteria in the question from medium to heavy, the problem was resolved and the selectivity of the question was improved.

Computer

Pilot testing and implementation of the computer version of the System has consistently identified computer down-time as a problem and a continuing source of complaint. A major step in correcting for down-time was accomplished with the change of the OIAS program from an IBM computer to a

---

[38]Weick, Pilot Use in Three Portland Offices, p. 14.

Hewlett-Packard computer, specifically designed as a time sharing computer. Consequently down-time is no longer a problem. In 1974-75 there will be three Hewlett-Packard computers running OIAS in Oregon.

Occupational Needle-Sort System

Experience with the computer version of the delivery system has pointed out that it is not financially feasible for some very small schools and social agency settings. Either the number of students who would use it was too low to economically justify its installation and use, or it would not be used on a regular basis. In response the occupational needle-sort version was modified and improved. A major change was removal of the occupational description from the face of the card and substitution of ready reference numbers to the major information files.

Computer printouts of the occupational descriptions and the education and training file were obtained, printed, and bound for use with the needle-sort. This change of format now provides the needle-sort version with an updating capability based on the computer files and has improved information delivery to users. These printouts, used in conjunction with the Needle-Sort version have proven to be an effective information delivery medium.

During 1974 CIS tested usage of the Occupational Description printouts independent of the rest of the System. They were placed in eight state Employment Division offices and given to 17 Lane County Career Education Coordinators. Two versions of the printouts were tested in the Employment Office. One version was the complete printout which is the same as the printout used with the Needle-Sort System. The other version divided the Occupational Descriptions according to occupational groups with each occupational group bound separately, i.e., a separate book for Administrative Occupations, for Clerical Occupations, for Bookkeeping-Accounting Occupations, etc. This was done to determine if subdividing printouts would facilitate wider usage. There was no indication that subdividing the descriptions by occupational groups facilitated their use. In fact in one situation, the individual groups were put into a binder so that they would all be together.

Within the schools and Employment Service offices, the printouts were placed in a variety of locations. In schools they were located by the OIAS terminal, in classrooms, in the Work Experience Office, in the Counseling Office, in the Library, in the School District Office, and one coordinator who worked with two rural schools carried his copy with him. In the Employment Service there was an equally wide range of locations. They included the Counselor's desk, the reception desk, placement desks, the general reference area for staff use and in the Job Information Service Library.

The printouts were used in a variety of ways in schools. The most common usage was as a supplement to the terminal. They would be used when the terminal was in use or when the student wanted only information about an occupation but did not want a printout of the occupation. They were often used in conjunction with reference books such as the Occupational Outlook Handbook. In Career Exploration classes, a common format is for students to take the GATB and use OIAS then to decide on three careers to research, a career requiring a college degree, one which needs some post-secondary training and one that can be entered directly from high school. The students are then required to write a Job Information Paper on each of these careers. The printouts are heavily used as a resource for these papers. However, in schools they are primarily used by students working independently of a teacher or counselor.

Employment Service Counselors used the printouts in several ways. One was to educate their clients about the tasks and activities included in a specific occupation. Another was as a check list for clients to look over and identify occupations they might be interested in. This especially helpful for clients who have worked in a particular occupation and are looking for related occupations to work in. Counselors also find the description valuable in their own understanding of the labor market.

The Eugene WIN office uses the printouts in their appraisal process to develop employability plans and alternative goals for clients. The abilities and outlook sections are particularly pertinent for this purpose. WIN counselors also use the printouts outside of the appraisal process for general information about employment outlook.

Placement specialists have found the descriptions useful in a number of areas. They report that the descriptions are an excellent source of information when responding to questions about an occupation and, occasionally, when writing job orders.

The vast majority of students and clients have no difficulty reading and understanding the occupational descriptions. This finding is fully consistent with prior evaluation results.

Thus it is clear that the Occupational Description printouts have a range of uses independent of other System components. However, it is necessary to encourage staff in schools and agencies to place copies of the Occupational Description Printouts in suitable locations openly accessible to students and clients to optimize usage.

User Handbook

Development of a good user's handbook has required considerable staff time and effort. Three versions of the handbook are in use--two for the two different computer systems and one for the occupational needle-sort. Both in form and appearance, the User Handbooks are far more finished products than the original QUEST questionnaire.

Information Format

Restructing the occupational descriptions is an improvement in informational storage and flexibility of response. The information for each description is stored in two sections: the first part, or common section, includes all the information contained in the occupational description which remains true for that occupation for any area of the state; the second part contains the information, such as employment prospects, which vary among areas of the state. This restructuring of the occupational descriptions contributes primarily to more efficient information storage, for the distinction is transparent to the user, though it does permit efficient user access of information for areas other than his own.

CIS Newsletter "Update"

The increasing number and geographical spread of schools, agencies, and institutions using the delivery systems has presented a need for more efficient means of communication between CIS and those institutions. It is essential that organizations using CIS occupational information are consistently informed of additions to, or changes in, the system or system components. Consequently, a decision was made to develop and publish a periodic newsletter. Three issues were published during 1973-74. The newsletter has unquestionably provided greater efficiency and continuity to in-service training and system maintenance activity. The topics of most interest to coordinators are additional occupational outlook information and new and creative uses of the System.

Educational Components Project[39]

Under a separate grant from the Fund for the Improvement of Post-Secondary Education (U.S. Department of Health, Education, and Welfare), CIS has been developing three new educational information components planned for implementation in January 1975. The result of these major additions means that the System will contain as much detailed educational and training information as it now has occupational information.

---

[39]The description and discussion of the new educational information files is excerpted from "Oregon Career Information System: Educational Components Project," Midyear Report, Submitted by Bruce McKinlay and Paul Franklin, University of Oregon, May, 1974.

The new files being developed are: (1) the Preparation File which includes research-documented statements on various ways to prepare for employment in the various occupations and clusters of occupations; (2) the Program File which provides a narrative description of post-secondary educational programs and a list of the schools which offer them in Oregon; and (3) the School File which provides descriptive data on all two- and four-year colleges and nearly all proprietary schools in Oregon.

> Each file will be systematically related through statements that will cross-reference the files, while insuring that information from each file can be accessed separately and independently by system users. That is, a user who wants only descriptive information about an institution need not examine occupations before being allowed to get the institutional information desired. Rather, users will be able to enter the system at any point: they can get institutional information, program information, preparation information or occupational information in any desirable sequence or individually. Thereby, the system encourages broad exploration and relation of post-secondary education to careers but recognizes that people come to the System with differing information needs.

Following are samples and explanations for each file and the process by which users access the information.

Preparation File

Not all educational programs provide training for specific occupations, and not all occupations require specific training. For example, English programs do not intend to prepare people for specific careers, and there are no formal training programs to prepare domestic workers. Moreover, there is little empirical evidence in the form of employment information about graduates to support the listing of educational programs under occupational headings even when their titles suggest that their intent is to train people for a particular occupation. In listing educational programs under occupational headings, one is forced to assume that accounting graduates actually gain employment as accountants or education majors become teachers even though training may exceed new hires by a wide margin.

Because of the foregoing, the expanded Career Information System will not directly list educational programs under specific occupation titles. Rather, the "Preparation File" is being developed to include an entry for each of the occupations currently included in CIS. Each entry will include a narrative

discussion of the ways to prepare for the occupation, including applicable segments of the following information:

- -The skills that one must develop to satisfactorily perform the job duties of that occupation;
- -Legal qualifications for employment in the occupation (e.g., training, licenses, age, bonding, etc.);
- -Ways to prepare for entry into the occupation, including distinctions between training and/or experience required for licensing, preferred by employers, and conventionally thought of as ways to prepare;
- -Cross-reference to appropriate training programs listed in the Program File under educational headings;
- -Description of the sequencing of the employment queue;
- -Ways to prepare for advancement;
- -Tips for improving preparation.

Each of the file entries will include varying pieces of the foregoing information, depending upon applicability and availability of reliable data. Labor market data sources, available task analyses, and telephone interviews with employers and personnel directors from firms employing specific occupations are the major data sources being used in developing the Preparation File.

This approach to the education-occupation relationship reflects the true relationship of education and occupations better than listing education programs under occupation titles, and provides substantial additional information as well.

Sample Preparation File Printout

PREP FOR 1634 APPRAISERS & UNDERWRITERS

SKILLS: KNOWLEDGE OF STATISTICS, COMPUTER SCIENCE AS WELL AS ANALYTICAL & REPORT WRITING SKILLS ARE USEFUL. PREPARATION: MORE THAN 60% OF THE EMPLOYERS REQUIRE AT LEAST SOME COLLEGE. MOST INSURANCE COMPANIES SEEK GRADUATES WITH MAJORS IN LIBERAL ARTS OR BUSINESS ADMINISTRATION. A MASTER'S DEGREE USUALLY IS NOT NECESSARY TO ENTER, BUT IT IS HELPFUL IF SPECIALIZING LATER. PROGRAMS & RELATED COURSES ARE AVAILABLE IN COMMUNITY COLLEGES, UNIVERSITIES & PRIVATE BUSINESS SCHOOLS. TIPS: HIGH SCHOOL GRADUATES WHO DEMONSTRATE ABILITY AS UNDERWRITING CLERKS MAY BE TRAINED AS UNDERWRITERS. TRAINING IN SPECIALTIES CAN ENHANCE EMPLOYABILITY. CLASSES & SEMINARS GIVEN BY PROFESSIONAL GROUPS CAN HELP AN APPRAISER GAIN PROFESSIONAL STATUS IN COMPANY & ALSO BECOME MORE KNOWLEDGEABLE ABOUT THE FIELD. BEGINNERS IN APPRAISAL WITH PREVIOUS SUMMER CONSTRUCTION JOBS MAY FIND THE EXPERIENCE USEFUL IN UNDERSTANDING QUALITY OF CONSTRUCTION & WHAT GOES INTO BUILDING A HOUSE.

Appropriate high school subjects can also be useful preparation for jobs or post-high school training. Thus, the Preparation File also lists relevant high school subjects, but it does so for the 25 job families or "clusters," rather than specific occupations.

Sample High School Subjects Printout

```
PREP FOR 4200    CONSTRUCTION OCCUPATIONS:

PERSONS IN CONSTRUCTION OCCUPATIONS USUALLY POSSESS
SPECIALIZED SKILLS WHICH THEY USE WHEN WORKING WITH PEOPLE
FROM OTHER BUILDING TRADES TO BUILD & MAINTAIN ROADS,
HOUSES, OFFICE BUILDINGS, & OTHER STRUCTURES.  CAREER PREP-
ARATION COULD INCLUDE THE FOLLOWING HIGH SCHOOL SUBJECTS:
    . ARITHMETIC                      ELECTRICITY & ELECTRONICS
      BUILDING CONSTRUCTION           PHYSICAL EDUCATION
      COOPERATIVE WORK EXPERIENCE     WOODWORKING
      DRAFTING
SOME HIGH SCHOOLS OFFER SPECIAL COURSES IN THE CONSTRUCTION
CLUSTER.  ON THE OTHER HAND, STUDENTS MAY NEED TO CONSIDER
POST-SECONDARY AND/OR ON-THE-JOB TRAINING.

YOU CAN LEARN MORE BY LOOKING AT THE DESCRIPTIONS FOR THESE
OCCUPATIONS:

4222  POWDERMEN
4242  PAINTERS
4244  PLASTERERS
4246  CEMENT & CONCRETE FINISHERS
4254  CARPENTERS
4264  BRICKLAYERS
4274  PLUMBERS
4276  FLOOR LAYERS
4278  ROOFERS
4286  CONSTRUCTION LABORERS
4288  RAILROAD LABORERS
```

Program File

The education Program File replaces the Education file and will include descriptive information about: types of programs; specialties; degrees offered, kinds of schools offering the program; length of programs; program emphasis, including similarities or differences from school to school; examples of courses contained in the curriculum; and, a cross-reference to related programs. The description will include a list of Oregon schools that offer the program, the institution's particular program title and other institutionally-specific information not dealt with in the narrative (e.g., special costs, program schedule, pre-requisites, differing emphases, etc.).

The school list will be organized by geographic region so that eastern Oregon residents can obtain a list of schools in their region only, or a full listing, depending upon their preference.

Sample Program File Printout

```
PROG FOR 63

063    FOOD SCIENCE AND TECHNOLOGY

     FOOD SCIENCE & TECHNOLOGY PROGRAMS INTEND TO PREPARE
PEOPLE TO DO RESEARCH IN THE FOOD INDUSTRY, ACT AS QUALITY
CONTROL INSPECTORS, OR WORK IN RELATED AREAS LIKE PURCHASING
& MANAGEMENT IN THE FOOD INDUSTRY.  PROGRAM EMPHASIS IS ON
MAKING BASIC RAW FOOD STUFFS INTO CONSUMER FOOD PRODUCTS.
     COURSEWORK: HEAVY EMPHASIS ON MATH & SCIENCE COURSES
LIKE STATISTICS, MICROBIOLOGY & CHEMISTRY, ALONG WITH COUR-
SES IN FOOD PROCESSING, FOOD SERVICE, QUALITY CONTROL & FOOD
ANALYSIS.  FOOD SCIENCE CLASSES INCLUDE LECTURE & LOTS OF
LAB WORK AS WELL AS TECHNICAL READING & SOME TECHNICAL
WRITING.
     OREGON STATE UNIVERSITY & MT. HOOD C.C. OFFER PROGRAMS
THAT EMPHASIZE FOOD PROCESSING.  BOTH SCHOOLS REQUIRE P.E.
& PERSONAL HEALTH.  THE OSU PROGRAM INCLUDES LIBERAL ARTS
COURSES LIKE ENGLISH COMPOSITION, ECONOMICS & ELECTIVE COUR-
SES IN HUMANITIES & SOCIAL SCIENCE.  CONSULT CATALOGS FOR
MORE COMPLETE DESCRIPTIONS OF COURSEWORK.  IN ADDITION,
MOST COMMUNITY COLLEGES OFFER THE FIRST YEAR OR TWO OF
DEGREE REQUIREMENTS WHICH CAN THEN BE TRANSFERRED TO OSU.
     RELATED PROGRAMS: 061 AGRICULTURE;  165 FOOD SERVICE.

SCHOOLS:

- - - - - 22709 MT. HOOD COMMUNITY COLLEGE - GRESHAM:
'FOOD PROCESSING TECHNOLOGY': 2-YEAR ASSOCIATE DEGREE PRO-
  GRAM.  PROGRAM SLOTS ARE LIMITED.  FOR ADMISSION CONTACT
  AN INSTRUCTOR IN THE FOOD PROCESSING PROGRAM FOR DETAILS.
- - - - - 21219 OREGON STATE UNIVERSITY - CORVALLIS:
'FOOD SCIENCE & TECHNOLOGY': BACHELOR DEGREE PROGRAM OFFERED
  IN THE SCHOOL OF AGRICULTURE.
```

School File

Users need more than the names of schools to understand them. Thus, the education components will add information about the institutions.

To access information from the School File, users select up to three institutions that they want to compare. The CIS User's Handbook will list institution names with individual access codes. As seen following, a user might type in 21812, 21205, and 22804 to get information about Lane Community College, University of Oregon and Willamette University.

Having designated the institutions for which he or she wants information, the user specifies the topics. There are 71 topics covering size and location, programs, special services, housing, costs, and related information about the institutions.

In the following example, general information as well as information about enrollment, school visits, alternative credit opportunities, and freshman admissions is requested.

The asterisks accompanying selected information pieces will refer users to a supplement which will include amplification of those items. For example, for "71 alternative credit" the supplement indicates the institution's procedures for Advanced Placement, in what areas credit may be received, how much credit is granted and who to contact for additional information. Supplement information will be numbered in the same sequence as the computerized pieces to facilitate easy cross-referencing.

The information supplement for each institution will be bound into a publication to be used as the institutional information source for needle-sort users, also. Additionally, each institution will receive copies of their own supplement for use in their information dissemination endeavors.

Evaluation of these new components will take place during the summer and fall of 1974 prior to winter 1975 implementation.

Implementation of these three new educational information files will not only enhance and balance the information files currently contained in the System, but they will also provide a readily accessible, comprehensive, and coherent compendium of educational opportunities in Oregon, heretofore only available in bits and pieces. Persons in the process of career decision-making will be able to make more informed choices from a significantly wider range of alternatives than in the past.

Sample School File Printout

	UNIVERSITY OF OREGON	WILLAMETTE UNIVERSITY	LANE COMM. COLLEGE
01 GENERAL INFORMATION			
TYPE OF SCHOOL	4-YEAR PUBLIC	4-YEAR PRIVATE	2-YEAR PUBLIC
GRADUATE DEGREES	EXTENSIVE	LIMITED	NONE
SCHEDULE OF CLASSES	MOSTLY DAY	MOSTLY DAY	MOSTLY DAY
CORRESPONDENCE COURSES	NO	NO	NO
UNDERGRAD SUMMER CURRICULUM	EXTENSIVE	4 WEEK POST-SESSION*	LIMITED
LOCATION OF SCHOOL	EUGENE	SALEM	EUGENE
POPULATION	90,100	72,445	90,100
CAMPUS TO CITY CENTER	7 BLOCKS	4 BLOCKS	4.5 MILES
MILES FROM PORTLAND	110	47	110
02 ENROLLMENT	FALL, 1973	FALL, 1973	FALL, 1972
TOTAL ENROLLMENT	16,043	1,616	5,584
WOMEN	6,575	586	2,328
MEN	9,468	1,030	3,256
FULL-TIME STUDENTS	14,187	1,585	3,770
PART-TIME STUDENTS	1,856	31	1,814
OUT-OF-STATE STUDENTS	4,795	919	139
NEW STUDENTS (FROSH)	2,175	400	2,593
NEW WOMEN	1,030	185	1,096
NEW MEN	1,145	215	1,497
05 SCHOOL VISITS	BY APPOINTMENT	BY ARRANGEMENT	ANY TIME
SCHOOL VISIT CONTACT	V. BARKHURST ADMISSIONS DIR 270 ADM SERV EUGENE, OR 686-4091	FRANK MEYER ADMISSIONS DIR WILLAMETTE SALEM, OR 370-6303	ANN STEWART SPECIALIST 4000 E 30TH EUGENE, OR 747-4501
OVERNIGHT LODGING	NO	YES, FREE	NO
71 ALTERNATIVE CREDIT			
ADVANCED PLACEMENT	YES*	YES*	YES*
CLEP PROGRAM	YES*	YES*	YES*
OTHER	YES*	YES*	YES*
75 FRESHMAN ADMISSION			
EDUCATION REQUIRED	HS DIPLOMA OR EQUIVALENT	HS DIPLOMA OR EQUIVALENT	OPEN ENTRY
H.S. GPA REQUIRED	2.25-FALL*	NONE	---
OTHER ADMISSION ROUTES	FALL*-SAT-890, ACT-20, GED 55	YES*	---
REQUIRED TESTS	SAT OR ACT*	NONE	---
ADMISSION SELECTIVITY	NOT APPLICABLE	1,003 APPLIED 797 ADMITTED 3.35 AVG GPA	---
INTERVIEW	NOT REQUIRED	RECOMMENDED	---
REQUIRED OR RECOMMENDED H.S. COURSES	NONE	COLLEGE PREP INCL MATH & FOREIGN LANG*	---

SUMMARY

Both the computer and needle-sort versions of the delivery system are effective means of disseminating occupational information to individuals for vocational exploration and decision making. For most purposes the teletype terminal version is considered more attractive and efficient than the needle-sort version. Within the system itself the QUEST questionnaire and the occupational descriptions are the most widely used and rated most valuable by high school students and agency clients. While the other components were used by only a minority of system users, each was considered as the most valuable system component by a significant portion of those who used it. Evaluation results consistently support the continuance of all present system components.

While many changes that have been accomplished do not radically alter the System or any component, each improvement requires a definite amount of staff time. Additionally, while feedback from System users is a good source of information about deficiencies and defects in the System, it cannot be considered a totally satisfactory source for innovative ideas and suggestions. Continuing pilot testing and evaluation of the different versions of the System and the individual system components provide a more solid basis for pointing out worthwhile prospective avenues of further information or delivery system development or improvement.

CHAPTER V

SERVICES TO USERS

CIS provides several types of services to population serving offices who join the System: assistance in developing career planning information services for their clients, consultation in how to implement CIS information systems, and assistance in evaluating the use of information systems in schools and social agencies. Both the form and content of information delivery for individual career planning have been described and evaluated in Chapters III and IV. The important complement to the information itself is CIS activity which supports and maintains on-going career planning information usage.

MARKETING, IN-SERVICE TRAINING, AND FOLLOW-THROUGH ON CAREER PLANNING INFORMATION USAGE

The main thrust of a new Career Information System consultation and in-service training during its first year must be the development of an awareness of its services throughout the state. Presentations and demonstrations of the information delivery system components and discussion of the System's capabilities and limitations to staffs of potential and scheduled user institutions and agencies was the principal means used to accomplish this objective.

Demonstrations At Professional Meetings

The CIS staff made a broadly aimed effort during Fall 1972 to bring awareness of its services to the local educational agencies in the state. Demonstrations were made at state counselors', principals', superintendents', and school boards' meetings as well as to teacher groups. In addition, several meetings, generally sponsored by regional career education coordinators, were held with educators in various parts of the state. Over twenty such demonstrations and meetings were held during the school year. The number of educators reached by these meetings is difficult to estimate, but it probably totaled a thousand. Some of the demonstrations were attended by more than forty persons and the Oregon State School Board's meeting reached two or three hundred.

Format demonstrations of the System generally consist of background and services of the project (system using a slide-tape presentation), demonstration

of the various System components, and an opportunity for persons in attendance to personally use the delivery system to access occupational and educational information. Experience has repeatedly shown that persons understand the System better after they have obtained information first hand. There is no substitute for this "hands-on" experience to convey the System's concept, delivery mode, and information.

The purpose for bringing this awareness of CIS services to local educational agencies was to demonstrate to these educators the value of CIS for their students. This is the first step in "selling" CIS service, and an active marketing program is essential to the rapid expansion of system usage.

Marketing Methodology

Within its second year, CIS shifted from developing an awareness of the system by potential users to identifying "key" educators in each area of the state and working with them to implement CIS on an area-wide basis. This approach is an outgrowth of the realization that it is more efficient for the CIS to work with a central agency than to enter into separate agreements with each of the schools within an area. However, it requires a key individual from an area to bring the schools together under one operational agreement, and to provide continued liaisons.

There are several consequences of this reliance on local institutions. Many users are contributing their knowledge of the System and their particular applications in conference meetings. There is also an emphasis on area-wide in-service meetings which include representatives from all the user schools within the area, with much of the follow-up work being done by local personnel.

The CIS plans to direct its field service effort during its third operational year to working with area coordinators in developing management systems which facilitate local service functions. These functions, include materials distribution, feedback from users, follow-up, and other tasks handled directly by CIS field service staff during the initial phases of the project.

This decentralized approach has been feasible partially because of a group in Oregon which can fill the need for CIS area coordination in schools. These are the "Regional Career Education Coordinators" whose financial support comes from the Oregon State Department of Education with partial matching funds from local intermediate education districts. It has been primarily through the cooperative efforts of these coordinators and CIS staff that working agreements have been articulated to efficiently serve institutions in the state with CIS services.

In-Service Training With Staffs

Whatever the organizational structure, once a school or agency has entered into an agreement to use the System, it is necessary for someone to conduct in-service training with appropriate members of the institution's staff. Planning the initial in-service training requires three related steps. First, several factors determine the specific content. What are the short and long range needs of the participants? Are they new or experienced users? Are they primarily using the needle-sort, the computer version, or just the occupational printouts? What is the level of sophistication in career decision-making of most of the participants? These and other questions should be studied in preparing the objectives for CIS in-service training.

Secondly, one must consider the dynamics of the group and the physical setting in which the meeting will take place. Are there "hands-on" experiences that the participants can be involved in? Are there local counselors or other personnel that are better equipped to handle parts of the workshop? How well acquainted are the participants? Plan carefully the processes and activities that can best accomplish the objectives that have been outlined for the meeting.

Finally, allow the participants a chance to express their feelings about the workshop. Hand out an evaluation form or set up some type of process which elicits feedback.

Typical of the CIS's in-service training programs for a community college staff was the one held in January 1973, with staff at Rogue Community College. Rogue, located in Southern Oregon, is one of the smaller community colleges in the state with a student population of about 700. The Dean of Students had become very interested in the services of CIS the year before but was unable to find financial resources to support the computerized version of the System. In late 1972, CIS introduced the Occupational Needle-Sort version which substantially reduced the cost and Rogue Community College was ready to go ahead.

The Dean called a meeting of those persons who would be working most closely with the CIS components. The group totaled six, including two members from the college's library staff and four from student personnel services. He wanted one of the needle-sorts and accompanying book of occupational descriptions to be used as a resource to students in the library and the other in the student services area by counselors.

A CIS staff member started the meeting with a short "warming-up" exercise to help him get better acquainted with the Rogue staff. He then used a CIS slide-tape presentation prepared for the purpose of giving an overview of the System's concept, its development, and what it has done in various settings. A number of

questions arose: Costs? How often is the information updated? How much help does a client need to use the System? etc. From these questions the CIS staff member was able to bring out the System's "Standards for Use," as adopted by the CIS Board of Directors. Within 45 minutes from the start of the meeting, the six members of the Rogue staff were divided in groups of three, one member in each group working his way through the needle-sort, assisted by the other two. As each group worked, the CIS staff member moved between the groups answering questions, pointing out the techniques for using the needle-sort cards, and generally clarifying various strengths and weaknesses of the System.

It was important during such an in-service to emphasize the usefullness of the labor market information being delivered by the System. As the first person finished his QUEST, he was asked to select one of the occupations on his list that he wanted to know more about. The CIS staff member read aloud this description emphasizing particular content. The difficulty of occupational forecasting and wage fluctuations were discussed.

After all six Rogue staff members had used the System, the discussion moved toward how they could integrate the System into their career counseling program. A number of ideas were expressed and the Dean arranged another meeting for his staff for the next day to fully set the System into operation with Rogue students.

Before leaving, the CIS staff member suggested several possible plans to publicize that the service was available to Rogue students. The total time for this training session was only two hours, an adequate length of time to obtain good results.

Rogue Community College was re-visited four to six weeks later by a member of the CIS staff to answer questions, talk with other faculty members, and generally see that the System was functioning properly. This second visit appears to be valuable in every institution or agency in which the System has been set up.

Integration of the System's components with counseling and instructional activities is not an easy task. Generally during each in-service, CIS staff will stress the importance of such integration and give some suggestions on methodology. One of the major responsibilities of the user agency is to work toward such integration.

A different style of training session is the general area-wide in-service (See Appendix D) that involves persons from each school or agency in the area who will be responsible for the system's operation within their building, as well as any other interested individuals. Successful workshops have been conducted with up to forty persons in attendance. It is usually the regional coordinator who makes the arrangements for these area workshops. The session starts with the participants taking a User's Handbook and answering the QUEST questionnaire. If the workshop is primarily for needle-sort users, enough needle-sort systems are made available for each participant to have a "hands-on" experience. A majority of the

participants go through the QUEST process and obtain their own lists of occupations. This "hands-on" experience lasts for approximately 25 minutes, all the time the CIS staff member is moving among participants, answering questions and showing techniques of sorting. This has proven to be an effective procedure to demonstrate what they can expect their students or clients to experience when working with the System.

Computer system users are asked to start a session by filling out their responses to the QUEST questionnaire. Since it is almost impossible to have enough terminals available for all participants to use, a volunteer is selected. This volunteer goes through the computer program with the other participants observing and asking questions about the volunteer's experience. Both the CIS staff member and the volunteer can freely comment about the System's merits and limitations.

From this "hands-on" experience the workshop moves into a short background of Career Information System. The participants are informed that the purpose of the CIS is to develop and deliver occupational, educational and guidance information. The point that CIS is a cooperative, requiring personnel and financial support from member organizations is also clearly expressed.

In-Service Evaluation

An In-Service Evaluation Questionnaire was collected from some fifty respondents during the Spring of 1974. Over half were counselors in junior and senior high schools. Eight were career education teachers and the rest were teachers, career education directors, placement coordinators, and administrative heads.

Generally, new users expressed greater satisfaction with the in-service training than the experienced users, yet both groups indicated they were satisfied. Asked how the presentation at the workshops could have been made more effective, new users suggested that trainers give more applications of CIS usage in schools and have a computer terminal present for demonstration. Experienced users also suggested making available the computer system as well as the needle-sorts at every in-service training session. It was also suggested that CIS develop a film depicting students actually using the Systems.

Concise evaluations not only indicate the general effectiveness of workshops but allow individuals to raise special concerns or ideas that they are unable to express in the group meeting. Thus it is useful that all in-service workshops be evaluated by participants.

Equipment and Personnel Needs

There are a number of equipment and personnel needs for implementing and maintaining the System in a school or agency. In each agency or school where the System is operating, a member of the staff is designated as CIS Coordinator to coordinate the activities and operations. With the Occupational Needle-Sort System, much less detail is needed to insure its proper use. Aside from ordering user handbooks, checking periodically the condition of the cards, and making sure the descriptions are available, little or no maintenance is required of the coordinator. The most difficult tasks for these coordinators are seeing that the needle-sorts are being used by students and that teaching staffs are made aware of the availability of updated occupational and educational information.

In contrast, the coordinator in a school or agency using the computerized version has most of the above responsibilities plus the maintenance of the computer terminal. As mentioned earlier, the placement of the terminal is important. If it is close to secretarial staff, the noise from the machine is disturbing. In addition, being too close may inhibit student use of the System, especially by some types of students. Placement too far from the coordinator and the counseling staff may interfere with the System's natural integration with their guidance and counseling functions. The coordinator needs to be aware of these factors in placement.

The computer terminal also presents a number of operating variables (log in codes, time-sharing, down times, etc.) that must be managed in effective manner to facilitate the System's best possible use. Although these variables do not require computer system sophistication, they do require some instruction on the terminal's operation and a conscious effort to be aware of its daily operations. Personnel from computer facilities in the state using the CIS programs have been very cooperative in assisting in the instruction of coordinators and in trouble-shooting when problems occur.

Experience with Various Locations

In January, 1974, CIS conducted a telephone survey of all school coordinators to identify any problems they might be having and to learn of creative solutions. The questions asked about location were: "Where is the System located in your school?"; "Does this seem to be the best location for student's use?"; if not, "What are the problems, and where would you rather have it?"

Most coordinators were satisfied with the present locations, but more people were dissatisfied with the terminal location than would be hoped. The primary reason given for dissatisfaction was competition for use of the terminal, which

is most intense in non-career centers and non-counseling offices. In many schools the terminal must be shared with the math department or the school administration. Students, according to the coordinators, sometimes feel inhibited about using the terminal around math students, or in the congestion of the administrative offices.

Terminal users viewed easy access and good supervision as key aspects of a satisfactory terminal location. The most satisfactory location for the computer terminal is in its own room, away from congested areas but close enough for students to get help easily.

Needle-Sort users have much less trouble with location, presumably because the needle-sort is more mobile than the terminal. Portability presents some problems of its own, and a few persons felt dissatisfied because they found that when they moved the Needle-Sort deck from its primary location, bibliographies and other resource books would be left behind and became separated from the deck, making good usage more difficult. Occasionally, accessibility was viewed as a problem, too. The teachers were not able to get the deck when desired if the office or classroom in which it was located was in use.

The most popular location for the Needle-Sort was in the classroom because of the easy access and because the Needle-Sort could travel to the different classrooms. One junior high school teacher mentioned that having the Needle-Sort in the classroom was an advantage because students could use the Needle-Sort when they finished assignments before other students.

In overview, the most satisfactory locations for the terminal are in a separate room exclusively for the terminal, in career centers and in counseling offices; because those sites provide easy access and good supervision. The least satisfactory locations were centers other than career centers and non-counseling offices because of competition for use, poor access and lack of space. For the Needle-Sort, the most popular locations were classrooms and counseling offices, and no location was stated as significantly undesirable. Easy access and mobility of the Needle-Sort deck, were important to location, while separation of the Needle-Sort deck from resources and inaccessibility were the major problems. One other comment made by a few of the users was that they would like to use this System in either their classroom or in a room specifically for the manual System to see if that would be more satisfactory.

TABLE 7

Satisfaction with Career Information System Location

Location	Number	Satisfied	Dissatisfied
Computer Location TOTALS	80	47	33
its own room	18	17	1
a career center	9	8	1
counseling office	7	7	-
non-career centers (e.g. math center)	17	5	12
non-counseling offices (e.g. attendance secretary)	13	4	9
hallway	2	2	-
staff room	2	-	2
classroom	2	-	2
other	10	4	6
Needle-Sort Location TOTALS	71	62	9
classroom	25	23	2
counseling offices	18	15	3
career centers	6	5	1
library	8	6	2
office and class	5	5	-
skill lab	2	2	-
student center	2	2	-
lobby	2	2	-
other	3	2	1

Coordinator's Handbook

In addition to inservice training, there is a need for a CIS coordinator's handbook that outlines the standards for operations of the systems, maintenance recommendations, various ways to integrate the system, ways to use system components, and other items about the System. This handbook entitled "Getting It Going, Keeping It Running" was written during the summer of 1973 and made available for use by coordinators in the Fall of 1973. The handbook has been well received but as the System adds components, modifies design specifications, and is used in new and creative ways, it becomes necessary to revise the coordinator's handbook periodically.

CIS Newsletter

CIS found it a necessity during the 1973-74 year to communicate with their 250 coordinators concerning new developments in the System, state-wide programs that relate to the System, and what other users were doing. A newsletter was devised as a practical means to deliver such information. The response from the local coordinators indicates the newsletter is being read and helping to communicate about CIS activities.

Material Distribution

Despite CIS' heavy usage of computers, there is still a need to distribute printed material. User's Handbooks and other materials are distributed during in-service training sessions, and additional supplies are routed through regional coordinators.

Since CIS usage has grown rapidly, the staff wanted to confirm that this distribution network was working satisfactorily. In January, 1974, a telephone survey showed that the delivery of User's Handbooks to schools was satisfactory. Only 13 of 157 coordinators said that they were having problems getting handbooks. Of the 13, five had problems at the beginning of the school year; four did not have enough copies, two did not receive the new handbooks; one did not know where to get handbooks; and one did not receive enough after ordering.

While talking with the school coordinators, it was made explicit that their county coordinator in the county school office (Intermediate Education District) was responsible for distribution, but that CIS would assist if problems persisted, as well as notify the particular county coordinators of the existing problems. Overall, however, users were very satisfied with handbook distribution.

INTEGRATION OF SYSTEM INTO OREGON

As stated previously, the integration of the System with the school or agency's counseling and instructional activities is important, but it is difficult to accomplish. There appear to be several problems that need to find resolution before full integration can take place.

Integration Into Schools

In many school counseling departments, the career decision-making function is so vaguely defined or so poorly understood by the members of the department, that the System appears to some to be a device to provide the whole function. Where this appears to be the case, the CIS staff person conducting the in-service training must educate the staff on the career decision-making process and show how the System is only an information delivery tool in the process. In more than one institution the System's installation has created a renewed sense of commitment on the part of the counseling staff to serve the career decision-making needs of their students.

Not an uncommon problem is finding adequate and effective placement of the computer terminal. Nearly one-half of all OIAS users report that this is a major problem in their institution. The System has been designed for independent student operation and has proved effective when used in this manner. Some of the most effective placements have been in career information centers, close to heavily trafficked areas, staffed by student assistants, and offering a variety of informational resources in addition to the System. Needle-sort users report a need for visibility too. Many school coordinators have taken needle-sorts into classrooms to introduce it to students and teachers.

Institutional staffs are not always waiting for labor market information with open arms. However, with the current emphasis on career education, attitudes are beginning to change. Interestingly enough, the concept and the delivery device of Career Information System has served to motivate teachers to get involved with good guidance information and relate this information to their classroom activities. A function of OIAS developed during the spring of 1974, STATPG, is proving to be useful by System coordinators and school curriculum personnel in determining what use students are making of the System, in a particular school. Since STATPG has been operational only six months, it is too early to be explicit about how such local reports might effect on-going school counseling and instructional programs. However, heavy emphasis will be placed on this report during 1974-75 school year by CIS staff so that coordinators and other school personnel will be aware of the potentialities.

Integration Into Social Agencies

A number of Oregon's state and local agencies provide clients with assistance in career decision-making. However, as a generalization, state agencies have tended to concentrate such assistance on placing clients into work settings and on controlling many of the variables (occupational information, test or assessment data, etc.) which lead up to the placement. Because administrative policies and the atmosphere in these agencies do not encourage clients' open access to information and exploration of career alternatives, CIS services have been seen as having limited value. However, some agency administrators and counselors are beginning to take a broader view of the services that they are presently offering to their clients so they are seriously studying new approaches to old problems. In agencies where such introspection has taken place and in those where it is in process, CIS is being viewed as a tool with considerable flexibility for use by clients.

The Oregon Corrections Division, lauded as one of the most progressive in the country, recently decided CIS should be an informational resource available to both men and women residents prior to their re-entering the work force. Oregon Corrections administrators and counselors have stated that rehabilitation for inmates must start during their confinement period with realistic planning, goal setting, and training activities. OIAS (computerized version) was established at the Oregon State Penitentiary, the Correctional Institute, and the Portland Center in mid-1974. This represents a major step forward for the System's application in serving non-school publics.

The survey of coordinators discussed earlier revealed several other useful pieces of information.

Staff Meetings. Few school coordinators hold orientations during the year with their staffs. Future group workshops should encourage these orientation sessions by sharing ideas and materials with which coordinators can effectively communicate. On occasion, CIS staff personnel have held such meetings with a fair amount of success.

Additional Needle-Sorts. Coordinators consistently said they desired more Needle-Sort decks than they presently had. Most had ordered one per 250 students, and they indicated that they would order more in the future.

Review QUEST. Some coordinators reported that students don't understand some questions in the questionnaire. CIS has made it standard policy to routinely review the wording of questions based upon the feedback from users. However, CIS is also developing a cassette tape recording that will help students review the questions, one by one with explanation. This will be distributed to user schools and agencies during the Fall of 1974.

CIS Occupations. Generally, coordinators are interested in knowing how the CIS staff has selected the occupations in the System. A short explanation of the methodology should be included at each in-service meeting. Users also need to know that occupations are added to the list each year as well as how often the labor market data is reviewed.

Local Information. A number of the coordinators in areas that do not have localized information made a point of asking for labor market information localized to their area of the state. CIS is presently working toward developing localized files for each of nine areas in Oregon.

Technical Aspects of the Needle-Sort. A few problems were reported where needles were bending or plastic cards seemed to be sticking together. The CIS staff have found solutions to some of these concerns by drilling larger holes in the cards and using knitting needles instead of the regular card sorting needles. Reviewing the techniques of sorting cards, showing how to get air between cards, and demonstrating how to hold the needle can be done at in-service meetings and have helped to answer such questions.

An additional development to assist integration is the growing number of career decision-making classes that are being offered in the state. Taught primarily by counselors, these classes are beginning to meet the need of the many students who want assistance. The need appears too great to be fully met through individual counseling. These types of classes can do much to help students understand themselves, instruct them of the career decision-making process, and help them find relevant sources of occupational and educational information.

GEOGRAPHIC COVERAGE OF CIS SERVICE

The penetration of CIS's services in the state's schools and agencies is illustrated by the following table:

TABLE 8

CIS Penetration in Oregon

	Potential Number of Users (students/clients)	Percent of potential users who use CIS service '72-'73	'73-'74	'74-'75 (est.)
Secondary Schools				
Lane County	22,000	50	60	55
Portland Metro	77,000	8	45	67
Coos & Curry Counties	7,000	30	66	67
Southern Oregon	21,500	--	40	67
Eastern Oregon	10,000	5	15	50
Mid-Willamette Valley	28,000	--	10	67
Hood River, Wasco, Sherman & Gilliam Counties	4,000	--	20	40
Central Oregon	5,800	5	10	30
North Coast	7,000	1	3	20
TOTAL	182,300		approx. 124,000	
Community Colleges				
Blue Mountain Community College*	700	--	30	40
Chemeketa Community College	3,500	--	--	20
Central Oregon Community College	1,000	--	--	--
Clackamas Community College*	2,000	--	50	25
Clark College (Vancouver, WA)*	3,500	10	20	30
Clatsop Community College	700	--	--	--
Lane Community College*	5,000	30	40	60
Linn-Benton Community College	3,000	--	5	10
Mt. Hood Community College*	5,000	5	10	50
Portland Community College*	12,000	5	30	50
Rogue Community College	700	25	30	40
Southwestern Community College	700	--	10	25
Treasure Valley Community College	500	--	10	25
Umpqua Community College	1,000	--	20	20
TOTAL	39,300		approx. 13,000	
Colleges and Universities				
Eastern Oregon State College	2,500	--	--	20
Pacific University	2,000	--	10	10
Portland State University	12,000	--	--	5
Southern Oregon College	2,500	--	5	10
University of Oregon	16,000	2	1	10
Willamette University	3,500	--	5	10
TOTAL	38,500		approx. 3,000	
Social Agencies				
ADC Confidence Clinic	50	--	50	100
Bureau of Indian Affairs	1,000	--	15	50
Neighborhood Youth Corps	1,500	--	--	10
Oregon Corrections Division	3,000	--	--	67
Oregon Employment Division	10,000	--	--	--
Oregon Vocational Rehabilitation Division (includes Mental Health)	6,000	--	--	40
Work Orientation Center	60	--	--	100
TOTAL	21,610		approx. 5,000	
	Total estimated users for '74-'75: 143,000			

*Community Colleges using OIAS (computerized version).

CHAPTER VI

IMPACT ON USERS

The Career Information System was established to mold available information sources, research techniques, delivery components, and client-serving institutions into a system which could assure individual career planners access to accurate and useful occupational labor market information. The Oregon Career Information System has made progress during its short life toward putting those pieces together. Supposing it succeeds in developing a system of institutions and delivery vehicles that is reliable, quick, and efficient, what difference does it make? One of the presuppositions of the entire venture is that such a system would have a salutory impact on career decisions. One can cite evidence from other studies that shows occupational labor market information to be of value to decision makers.

With occupational information shown to be of significant benefit to individuals one wonders what evidence there might be of CIS impact on users' understanding of occupations.

> "A simple occupational information test administered to a national sample of young men 14 to 24 years of age produces scores which are positively related to amount of education, age, measured intelligence, and socioeconomic status of family of origin. In addition, youth who have grown up in large cities or their suburbs tend to score higher, other things being equal, than those whose origins are on farms. On the other hand, extent of occupational information appears to be unrelated to the intensity of vocational counseling in the high schools attended by the youth. On the basis of information on average hourly earnings and occupational assignment two years after the administration of the occupational information test, it appears that youth with superior information were successful in obtaining better and higher paying jobs.[1]

---

[1]Herbert S. Parnes and Andrew I. Kohen, Occupational Information and Labor Market Status: The Case of Young Men, Center for Human Resource Research, Ohio State University, Columbus, Ohio, 1973.

IMPACT OF INFORMATION ON INDIVIDUAL CAREER PLANNING

Most of the currently available information pertains to the impact of CIS in completing the information flow. It describes the reactions of individuals to the ready availability of such information, but is incomplete as to the more permanent consequences of their use of that information.

Much of the evidence of impact on career decisions comes about as a result of research into the effect of the information delivery system, while other evidence is more anecdotal. To an extent, the effectiveness of occupational information is dependent upon users finding it readily available, attractive, interesting, and easy to use. Attractiveness certainly has been responsible for much of the popularity and wide usage where the System has been tested and permanently installed. Moreover, as has been noted previously, the information and its delivery are complementary aspects of the same process, thus it is difficult if not artificial to distinguish the impact of the information per se from the impact of the total delivery system, which includes information, delivery components, and user needs. Because of this interrelatedness, the substantial available research concerning the delivery components is pertinent to a discussion of impact. Evaluation of experience to date has demonstrated not only the total System's attractiveness to users and user institution staff, but also its effectiveness as an aid in career decision-making. That kind of attractiveness and effectiveness determines in part the extent of its impact on users.

Types and Amount of Information Supplied for Career Decision Making

In the CIS delivery system, individual users decide the type and amount of information they receive. The vast majority utilize the worker trait and labor market information underlying the questionnaire, and most access information on a variety of occupational topics through the occupational descriptions. A small but significant proportion also use published information and opinions of individuals through the other information components.

While the form and content of information potentially available to any system user have been described in Chapters III and IV of this report, there are other important aspects of the quantity and quality of the occupational information supplied. Since most individuals using the System utilize the questionnaire, the resultant list of occupational titles constitutes an important piece of information itself. The personal relevance of the information delivered is one effect of the delivery system which has been substantiated. Additionally, the easy access to the different information files facilitates organized occupational exploration. It also provides information in satisfactory amounts.

Evaluation of student and client usage indicates that the amount of information delivered at particular points is commensurate with the amount of information desired by the user at that particular point in the occupational exploration process.

For some users the information contained in the occupational list is sufficient; for others one or two occupational descriptions suffice, still others want or need the detailed information contained in the books referenced in the Bibliography or Education and Training file. Thus the user controls the amount delivered and results indicate a satisfactory balance between the amount of information desired and the amount delivered by the System.

Results of system usage previously described in this report point out that the System is easy to use, the information is easy to understand and personally relevant, and the majority of users obtain the information they seek.

Effects on Special Client Groups

Available research indicates that the information available through the System is attractive and effective with a wide range of students and clients. In early pilot testing some counselors said the System was most valuable with young, disadvantaged, unmotivated clients, others pointed out its value for bright and articulate college students, slow high school students, people with some idea of their goals, people with no idea what they want to do, returning servicemen, and potential college students.[2] In later testing in Employment Division offices it was only slightly less attractive and effective for disadvantaged than non-disadvantaged clients. However, a number of counselors thought that clients with low abilities, the severely disadvantaged or clients with very low reading skills are the persons helped least by the System.[3] Recent pilot testing has included NYC enrollees, WIN enrollees, women participating in an Aid to Dependent Children Association Confidence Clinic, elderly persons seeking employment, residents of a correctional institution and general adult populations. Results of pilot testing with these groups is consistent with previous evaluation.

---

[2]Bruce McKinlay and Larry Ross, Evaluation of Occupational Information Access System Use in Six Pilot Agencies, University of Oregon, Eugene, Oregon, 1970.

[3]Jerry Weick, Occupational Information for Employment Service Counseling: An Evaluation of Occupational Information Access System Pilot Use in Three Portland Employment Division Offices, University of Oregon, Eugene, Oregon, 1972.

This wide applicability speaks well for the flexibility of the System in responding to individual needs, and suggests that costly tailoring of information for each different population is not as necessary as some have contended.

High school students. High school students use the System extensively when it is available for their independent use. This is a consistent finding from tests of the System in the schools.

Interest in and use of the System is high and seems not to wane among high school students. Terminal use records for Churchill High School in Eugene indicated that the System was used 442 times during the System's first four-week test in 1970. About a third of the student body used the System, many more than once. Counselors observed students waiting in line for an opportunity to use the System, and one counselor estimated that students used it about 75 percent of the school day.[4]

Churchill's counselors wanted the System kept at the school, and further testing was conducted where student reaction was explored more fully.[5] This second test at Churchill High School lasted for the five months between January and May, 1971. During that time about half the student body (between 500 and 600 of the 1,040 students) used the System. Most made repeated use of it. The average number of times the System was used equaled 2.3 per student, and the average total time the student spent using the System was somewhat over one hour.

A significant factor in assessing the information system's attractiveness for students is the fact that there was practically no publicity given to the System. Students learned about the System by "word of mouth". Further, there was no organized instruction on how to use the System. Students learned how to operate it from written materials available in the room or from each other. Considering the lack of publicity given the System, it is impressive to note that only 10 percent of the student body had not heard of it.[6]

---

[4]McKinlay and Ross, Access System Use in Six Pilot Agencies, p. 9.

[5]Ibid., 19.

[6]Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School, Bureau of Governmental Research and Service, University of Oregon, Eugene, Oregon, 1971.

The System's attractiveness seems to continue, even after the novelty has worn off. At the conclusion of the evaluation period in September 1971, the System was implemented at Churchill on a permanent basis. During the 1971-72 school year the System was used a total of 372 terminal hours, enough time to serve virtually the entire student body of Churchill. This pattern is continuing. The computer record for the 1972-73 school year at Churchill indicates nearly 200 terminal hours used on OIAS while during 1973-74 the usage climbed to 250 hours, despite the fact that all students had used the System in previous years either at Churchill or in junior high school occupational exploration classes, and there was some competition for access to teletypes.

The continued use demonstrates the lasting appeal of such information to students. There is some accompanying evidence of a growing sophistication in the use of labor market information by students to whom it has been available for several years. One piece of evidence is the fact that the use and their choice of a "best part of the System" shifts from QUEST to the occupational description files where greater amounts of information are stored. There seems also to be an increasing use of supplemental information.

At Churchill High School counselors reported that OIAS was an excellent tool for learning. One counselor noted that the questionnaire showed students that there is not just "one right occupation" for a person, but that most people could do well at several different jobs.

The fact that each student can take a printout of his list of occupational titles, which he could take home to his parents, was seen as a valuable aspect of the System. This was shown in the later study at Churchill, where a small-sample survey indicated that two-thirds of the students who use the System take materials home and discuss them with their parents. Parents reported spending an average of 47 minutes discussing career plans with their children as a result of the material brought home. Parents generally exhibited an accurate impression of the purpose of the System and thought that the services the System provided were important enough to warrant its permanent usage in all secondary schools in the community. Clearly, the System was effective in stimulating communication between parents and students on the important topic of career planning.[7]

---

[7] Ibid., pp. 55-56.

Further evidence that the System is effective in stimulating constructive discussion between parents and students has come from schools who are using the Occupational Needle-Sort. Several have loaned the Needle-Sorts to students over night, much like reference materials from the library, for students and parents alike to answer the QUEST questionnaire and sort through the cards at home. Very positive reactions from parents indicate the usefulness of this type of process.

The first evaluation at Churchill pointed out that students can and will use the System without staff encouragement, assistance, or monitoring. Counselors at Churchill agreed that the students' independent usage was constructive and beneficial.[8] "One of the aspects of OIAS which is attractive to students is the private, independent use which can be made of the System. Students have expressed a liking for this facet of OIAS over and over again." "Under the unmonitored arrangement at Churchill, there was not a single incidence of loss, breakage, or vandalism. Moreover, analysis of independent student usage has demonstrated that students do not need assistance in operating the teletype terminal or other equipment used with OIAS."[9]

Results of the later study at Churchill High School indicated that "while OIAS was influential with students, it had little impact on established instructional programs. Only about 9 percent of the student body used OIAS in connection with a class assignment and the bulk of that use was by the career education teachers and counselors."[10] Yet, the System is, and can be, effectively used within an instructional program. At Churchill one instructional innovation, which made considerable use of OIAS, was a short career exploration course called "Careers and Values." This course provided an opportunity for students to examine their own interests, goals, and preferences and the relevance of career choice. The teacher-counselor indicated that students liked OIAS best of the class's several activities and that he planned to use it more intensively in this course the following year. All faculty who used the System said it made it possible to use more information in instruction which they would not have used otherwise.[11]

Churchill High School students are not unique in their receptiveness of the System. Several other Lane County and Portland High Schools are using more

---

[8]McKinlay and Ross, Access System Use in Six Pilot Agencies, p. 20.

[9]McKinlay and Adams, Evaluation of Access System at Churchill, pp. 48-49.

[10]Ibid., p. 4.

[11]Ibid., p. 33.

computer time on the System than Churchill during the 1973-74 school year. This may be partly attributable to their larger school populations; it proves that when students and staff become aware of the System's capability and availability, they use it! During January of 1973, a visitor to a large high school on the outskirts of Portland which had been using the System only two months was surprised to find students on four computer terminals engaged with the System and students standing in line behind each. Upon inquiry, he was informed that the school had promoted the System through the student newspaper and had been almost inundated with student requests for use ever since. Such activity not only points to the students' liking for the process and content of this System, but to their desire for occupational and educational information.

Junior high students. Interest in and use of the System among junior high students is consistently high where the System is easily available to students and where the staff encourages its use. A review of the user records from 41 secondary schools in Lane County for the month of February 1973 demonstrated the following: (1) Junior high schools appear to log as many hours of computer time on the System as high schools in Lane County; (2) In two school districts, the junior highs used the System significantly more than the high schools.

The number of hours of computer time is only a part of the total picture. The State Department of Education, professional counselor groups, and local school districts are placing special emphasis on career exploration programs through the mid-school years. Particular programs such as SUTOE (Self Understanding Through Occupational Exploration) are being supported through state-wide workshops. These programs encourage students to: (1) explore key occupational areas and assess their own interests and abilities; (2) become familiar with occupational classifications and clusters; (3) develop awareness of relevant factors to be considered in career decision making; (4) gain experience in meaningful decision making; and (5) develop tentative occupational plans and arrive at tentative career choices. What the System can offer in career information as well as with the exploratory questionnaire, QUEST, is seen by Oregon educators as both complementary and vital to these emerging programs. These instructional innovations at this mid-high level are a most significant development in Oregon education.

Data collected from small-sample evaluations at Shasta and Jefferson Junior High Schools in Lane County are consistent with findings at the higher level. Results on a "job information test" indicated that disadvantaged junior high school students who used the System in their occupational information class not only scored better on the objective questions about job duties, earnings, and educational requirements for a pre-selected list of occupations, but were able to list twice as many occupations as students who did not have the System or

class. These findings strongly indicate that some learning took place as a result of using the System in an instructional program.[12]

College students. Testing at Lane Community College was conducted during the 1970-71 school year. In this evaluation many users were attracted to OIAS who did not have a recognized need for information. However, once they started working with the terminal, these users would become interested in the information they were generating.[13]

Another test site was the University of Oregon Counseling Center. There, the System was used by clients almost solely after personal contact with a counselor or in connection with a Career Analysis class. The four University counselors who were involved with the evaluation stated "definitely yes" when asked whether OIAS should be kept at the University of Oregon.

As in the Churchill High School and Lane Community College situations, four counselors went on to note that as clients became more involved with the System they became very serious and objective about it. The counselor who used OIAS with his Career Analysis class noted that students took their individual printouts to class, exchanged them with others, and compared and discussed the various results. He further mentioned that these students returned many times to the terminal, told others about the System, and generally became very excited about the System.[14]

The counselors at Lane Community College agreed that, with the installation of the CIS terminal, they were more likely to use occupational information and felt they generally made better use of the occupational information than they had previously. "Three of the four said that the System saved them time previously spent looking for information, but they were unable to estimate the amount of time saved."[15]

A study comparing OIAS to the Lane Community College Counseling Center in terms of their abilities to deliver occupational information to students concluded that:

---

[12]Leonard D. Adams and Lawrence K. Fowler, Vocational Counseling at the Junior High Level, 1971.

[13]Larry Lynn Ross, The Effectiveness of Two Systems for Delivering Occupational Information: A Comparative Analysis, Master's Thesis, University of Oregon, Eugene, Oregon, 1971.

[14]McKinlay and Ross, Access System Use in Six Pilot Agencies, pp. 45-46.

[15]Ibid., p. 40.

OIAS's purpose is pure occupational information delivery; interpretation of the information delivered is left to the individual user. Counselors, in contrast, deliver occupational information plus counsel and advise students as to what the information means and how to interpret it.

Despite this difference in System roles or purposes, every attempt was made to objectively compare OIAS and the Counseling Center in terms of their effectiveness in delivering occupational information. Study results indicate that OIAS is at least as effective, and definitely more efficient, as an information delivery system.

The ability of OIAS to deliver occupational information more efficiently and much less expensively than a counseling staff does not mean that OIAS should be substituted for counselors. In fact, OIAS would be a poor substitute for a college counselor, since it serves only the purpose of information delivery. Counselors, whose tasks typically involve personal advising as well as delivering occupational information, could benefit from using OIAS to obtain information. The time previously spent filing occupational materials and searching through innumerable information sources could be spent offering personal human advice to college students.[16]

Some information is available about the larger question of impact on community college students. In the evaluation at Lane Community College, ten percent of the students reported changing their career plans as a result of using the System, and 2 percent claimed that using the System increased their sense of certainty about their career plans.[17]

During the 1972-73 and the 1973-74 academic year, Lane Community College developed a highly visible and remarkably effective Career Information Center. Coordinated by one of the counselors and entirely staffed by para-professionals, this Center is actually serving thousands of students and potential students with a "place to start" in their search for a satisfying career. Use records indicate that well over 2,500 persons used OIAS in the center during the 1973-74 year. The staff at the Center substantiates this by indicating that someone is at the terminal almost constantly through the day and often during the evening hours. They also have stated on numerous occasions to visitors that OIAS

---

[16]Ross, Effectiveness of Two Systems: Analysis, pp. 83-84.

[17]Ibid., pp. 60-61.

has something to offer to anyone using it, regardless of their position or lack of position in life.

Employment Division clients. In an early test of OIAS at the Eugene Employment Division office 18 clients were introduced to OIAS; this constituted about 10 percent of the clients counseled during the test period. In general, the counselors at the Eugene Employment Division found the System unattractive. Counselors did not like the terminal's noise. The terminal was located in a room designated as a "library" and they felt its noise was incompatible with the function of a library. Consequently, counselors favored removal of the System from this agency.[18]

This early testing at the Eugene Office produced the only negative evaluation to OIAS in any of its tests. Counselors typically allowed clients to use the System completely independently after the client was given a brief explanation. Those who introduced the largest number of clients to OIAS found that clients encountered few, if any, problems, but the counselors were generally antagonistic toward the System, claiming that OIAS is dangerous and that any occupational information is frequently inappropriate for severely disadvantaged clients or clients with special kinds of problems.

Comments were elicited from counselors in other test agencies on the "potential danger" of OIAS and their opinions offered no support for this contention.[19] There appeared to be some lack of clear communication between project staff and Employment Division counselors which raised an impression that possibly the System did not get a fair test.[20] In the evaluation of OIAS in three Portland Employment offices, no counselor indicated that the use of OIAS had adverse effects upon any clients.[21]

The prototype of the Occupational Needle-Sort version was tested at the Lebanon Employment Division office. Results there indicated: "The computer is not essential to effective functioning of OIAS. The needle-sort card system effectively demonstrates the consequences of individual question responses, and provides good access to occupational information."[22] Both the counselor and users at Lebanon stated that the card-sort system gave users a wider selection

---

[18]McKinlay and Ross, Access System Use in Six Pilot Agencies, p. 29.

[19]Ibid., p. 28.

[20]Ibid., p. 30.

[21]Weick, Pilot Use in Three Portland Offices, p. 11.

[22]McKinlay and Ross, Access System Use in Six Pilot Agencies, p. 5.

of occupations and started users thinking on a wider scale giving them some new occupations which they would consider seriously.[23]

Attractiveness of the System was indicated by the fact that the Lebanon office manager and the two counselors tooks an intense interest in it. They added references to their other occupational materials to the bibliography and made some interview cassettes themselves. Even though this was a limited test, it indicated that both counselors and clients found the manual system attractive enough to warrant further testing and development.[24]

TABLE 9

CLIENTS WHO INDICATED
THEY WOULD USE OIAS AGAIN
IF THEY NEEDED JOB INFORMATION LATER [25]

Total, All Clients	95%
Non-Disadvantaged	99
Disadvantaged	91
Computer	94
Card-Sort	88

The attractiveness of OIAS for Employment Division clients was assessed in a major test of the System in three Oregon Employment Division offices in Portland. In this evaluation a distinction was made between non-disadvantaged clients and disadvantaged clients. Two questions were asked of the users: First, whether they would use OIAS again if they needed job information sometime in the future. The second question asked was whether the System should be kept at the Employment Division. As the table above demonstrates, the responses were extremely positive to both questions, and included card-sort as well

[23] McKinlay and Ross, Access System Use in Six Pilot Agencies, p. 37.

[24] Ibid., p. 36-38.

[25] Weick, Pilot Use in Three Portland Offices, p. 8.

computer based versions.

Both answers show a strong pattern of demand among clients. It is significant to note the very high proportion of disadvantaged who responded with strong positive ratings.

In the comparison of the needle-sort and computer versions of the System, the card-sort proved less effective in getting users to read the descriptions than the computer version; yet both were effective.

Counselors reported that the terminal was easier to use with clients. "Ten of the seventeen counselors participating in the test preferred the computer version and thought it was more effective than the card-sort. Only one counselor expressed preference for the card-sort version, saying she personally liked the card-sort better, but the computer was in fact a more attractive, effective version for her clients. The remainder remarked that each version has some advantages and disadvantages, but most of them considered the computer version more efficient."

TABLE 10

CLIENTS' RECOMMENDATION ABOUT KEEPING OIAS AT THE EMPLOYMENT DIVISION[26]

	Non-Disadvantaged Clients	Disadvantaged Clients	Computer Group	Card-Sort Group
Definitely Yes	60%	49%	60%	47%
Yes	39	49	39	49
No	1	2	1	4
Definitely Not	0	0	0	0

(92% of the clients responded)

[26]Weick, Pilot Use in Three Portland Offices, p. 9.

"The main advantage cited for the card-sort was its greater effectiveness in showing the client what was happening in the sorting process and how each response affected the outcome. The most frequently mentioned disadvantage of the card-sort was its cumbersomeness. Cards tended to stick together and sometimes didn't drop out properly.[27] To facilitate the cards dropping out, the current version of the Occupational Needle-Sort System uses a slicker plastic stock for the cards. The holes are slightly larger in diameter and closer to the edge. The cards are now easier to use and exceedingly durable. Although both modifications represent major improvements, there are still some minor mechanical difficulties reported by users and yet to be solved.

As the Lebanon test demonstrated for the needle-sort, so a counselor stated about the computer system: "I think it affected the client's attitude by helping him to see that there is a far wider range of possibilities than he may have originally considered; this is one of the real strengths of the System."[28]

In the Portland Evaluation most counselors indicated that while OIAS did not reduce the amount of time spent in counseling a client, it brought more information to bear and made more alternatives available within the same amount of time. "Since more information and alternative choices were available to OIAS users, more exploration resulted."[29]

Thus, OIAS amplified the decision-making process and tended to introduce more order into the occupational decision-making and counseling processes by allowing counselors to concentrate on counseling and not on information delivery.

Special client groups. Several special client groups have used the System. These groups include enrollees from the Neighborhood Youth Corps, Work Incentive pre-employment group, women from the Lane County Aid to Dependent Children Confidence Clinic, and retired persons looking for part-time employment. A full evaluation from these special client groups was not made. Often the number of users were too few to draw a reliable sample or resources were not available from either the CIS or the user agency to perform rigorous evaluation. However, results from these special client groups do help specify and delineate what has been found from full-scale evaluations of OIAS.

---

[27]Weick, Pilot Use in Three Portland Offices, p. 44.

[28]McKinlay and Ross, Access System Use in Six Pilot Agencies, p. 41.

[29]Weick, Pilot Use in Three Portland Offices, p. 6.

Neighborhood Youth Corps. The System was used with 121 Neighborhood Youth Corps enrollees from three Oregon counties, Deschutes, Tillamook, and Umatilla, during the summer of 1972. The enrollees were transported to sites within each county where an OIAS terminal was located. At each site there was a person trained in the use of the System to work with the enrollees. Results of pilot usage were obtained verbally and in writing from the respective NYC field supervisors and from evaluation questionnaires completed by some NYC enrollees. Because of different conditions of usage, results varied from county to county.

Overall, NYC supervisors and the NYC state director concluded that the System made a positive contribution to the NYC program. The NYC Project Director indicated his intention to use the System again with NYC enrollees and also to develop a plan whereby results could be forwarded to enrollee's local high school counselors to provide follow-up and continuity during the subsequent school year.

In Umatilla County 30 enrollees participated and responded to an evaluation questionnaire. Responses of the 20 female enrollees form a positive overall pattern highly consistent with results of prior field tests. The ten male enrollees responded less favorably. (These young men were described by the NYC supervisor as "very marginal types.") All indicated both the job descriptions and the questionnaire were easy to read, and the majority who used the System reported that it helped them make job plans.

In Tillamook County NYC enrollees were given the General Aptitude Test Battery in the morning and then used OIAS in the afternoon. Comments of enrollees were critical of the teacher who administered the test and the length of the testing process. Length and classroom setting factors clouded results of system usage. Evaluation indicated, however, that three-fourths benefited.

Use with NYC enrollees in Deschutes County resulted in the local NYC supervisor requesting an appropriation of funds from the state project to make the System available to the program on a 12-month basis. The Deschutes County NYC Field Supervisor saw it as "a highly valuable service for the population segment with which we are concerned in NYC."

From these results with NYC it is apparent that the System is appropriate for and helpful to NYC enrollees. However, the mixed results of pilot use indicate a need to better determine the context of its use in NYC. It appears that development of some basic guidelines for OIAS usage based on the experiences with the enrollees in the three counties where it was used would enhance its effectiveness and produce more consistent results.

Work Incentive Program. The CIS services were tested with a six member Work Incentive Pre-Employment Motivation Group. The members of the group were considered job ready, but at the time of this involvement in the group, they had not found employment. Plans had been made to work with several of these groups in order to obtain some information about the place in the evaluation and training cycle of social service clients where occupational information is of the most value, and to develop an effective model for delivering occupational information to such clients. However, staff cuts in the Employment Service terminated this experiment.

The WIN counselor concluded from this limited experience that it would have been much more beneficial for the enrollees to have used the System when they were first making their choices about occupational goals, rather than after they have been classified as job ready. He went on to state, however, that occupational choice is not a one-time activity, but people would have an on-going opportunity to explore the world of work and re-examine their decisions. To do so, people need the kind of information and format for their decision making that CIS provides.

The counselor found that bringing small groups (3 or 4 enrollees at a time) to the terminal was an effective way to work with the System. He found that the users gave each other feedback as they worked on the terminal and with the other System components, i.e., the cassette interview tapes and Bibliography and Books. Utilizing the System in this way opens opportunities for dialogue between clients and the counselor.

Three of the six users reported that the System helped them make job plans. Five of the six stated that the questionnaire gave them some new job titles to consider for future work. The person who answered "no" to this question is one of the persons who stated the System helped her make job plans.

As in the other evaluation, unless the use of the System leads to a very specific decision regarding employment plans, users often say it did not help make job plans even though they also say it gave them some more options to consider.

ADC Association. The Lane County Aid to Dependent Children Association is operating a Confidence Clinic for women who are receiving assistance from the Children Services Division of the Department of Human Resources. The clinic director is using the CIS occupational needle-sort system to supply the women with occupational information and as the primary tool in the clinic's career counseling program.

She has experimented with two methods of using the System with small groups of women. In one setting (the first group to use the System) the director went through the System with the women. This resulted in the women looking to her as the "expert" and they in turn did not learn much from the experience.

In the second model the director went through the entire process of showing the women the System (card deck, description file and bibliography). She gave some background to QUEST, explaining how a person's occupational options were affected by the way they answered the questions. She then turned the System over to the group to work with as they wanted. The result was that the women within the group began to help each other. One person would use the card deck while another would work with the descriptions and others would discuss their responses to QUEST and what would happen if their answers were different. This model has been used with several subsequent groups with like success.

This activity led the women to examine their decisions more carefully in terms of occupational opportunities and to utilize occupational information in their decision-making process.

HELP. A limited version of CIS's information delivery system was also tested with a small sample of persons (15) from the HELP project. Help Elderly Locate Positions (HELP) is a non-profit employment referral service for persons 55 or older. The card-sort system was used to see if it would generate a list of new occupations of interest to older persons.

To insure that each individual would understand the meaning and intent of each question, the researchers worked with each HELP registrant and reviewed the questionnaire with him. After completing the questionnaire and going through the card-sort system, each registrant evaluated the process. Overall impressions were positive. All 15 stated that they had held at least one job which was included on their list. They found the process and the information interesting and worthwhile.

General Public.- There have been pilot uses where the System was available to the general public. In March 1973 the System was available for one week in the Mall area in the Valley River Shopping Center, Eugene's largest suburban shopping center. Approximately four hundred people, primarily adults, used the service. Because of heavy demand, many had to sign up on a waiting list. Thirty-two of those who later returned to use the System were surveyed by telephone a month later. Nearly one-half of those interviewed were very satisfied or satisfied with the System, one-third felt ambivalent or neutral and one-fifth felt dissatisfied. Those feeling neutral indicated they did not have enough time to use the System or thought it would be better for youths than adults. Those who

were dissatisfied generally wanted more specific information, especially job openings. However, most people felt they received the help they wanted.

The System has been available to the public at the several county fairs in various parts of the state where it generates much interest and receives heavy usage. (These usages are sponsored by local schools who staff the booths.) While full-scale evaluations have not been conducted, these pilot tests make it clear that many adults find the System very attractive.

Shelton Correction Institution. The experience of 30 persons using the information delivery system in the correctional setting closely parallels previous evaluation results. The vast majority of users found it helped them think about their own interests, abilities and preferences as they relate to occupations and it suggested new occupations to consider. Most expressed a desire to be able to use it for at least one hour, whereas they were scheduled and used it only half that amount of time.

While none of these on-going pilot uses is fully conclusive, each test contributes some elaboration and detail to the firm base of full scale evaluative data. As CIS concentrates more on delivering information in varying social agency settings, adaptability of System usage to different client groups continues to be an important consideration. These experiences with NYC, WIN, and other client groups help further development of attractive and effective format and System usage.

MAJOR OBSERVATIONS ABOUT CAREER PLANNING PROCESS

The extensive field testing of the occupational information delivery system has produced some observations about the career planning process. While evaluations have focused on assessing System effectiveness in delivering pertinent occupational information, these evaluations have also produced some observations about career planning and decision-making processes.

First, it is clear that not everyone interested in occupational information or involved in career planning wants counseling. In the Churchill High School Study only a minor portion of students who used OIAS used it in connection with a class assignment or with counselors.[30] When the System was pilot tested at Lane Community College, it was found that students used it for a variety of reasons, including curiosity, recreation, class assignment, and on recommendation

---

[30] McKinlay and Adams, Evaluation of Access System at Churchill, pp. 4-6.

of teachers and counselors, while 34 of 35 students who used the Counseling Center cited a personal need for occupational information as their main reason for seeking counseling.[31] Both groups were satisfied with the information obtained and the process of obtaining it. Much pertinent occupational information was received by students who, for whatever reasons, did not seek counseling.

Clarification of the distinction between counseling and information delivery is a corollary observation. Results of the Portland test in State Employment Division offices showed that when OIAS was used as a discrete part of the counseling process, "it tended to introduce more order into the occupational decision-making and counseling processes.[32] A major difference between experimental and control groups in the Portland study was that the same counselors were to treat information delivery more explicitly with OIAS users than with control group clients who received occupational information only when the counselor recognized a need for it within the on-going counseling process.

The impact of the System in facilitating greater ordering in the counseling process points to the definite need for some occupational search strategy. As reported in the Portland study, usage of the QUEST questionnaire and list had an educative aspect apart from information content. Users became aware of more factors involved in career choice and how such factors affect occupational options.

Exploration should be considered a distinct step in occupational decision making. Most persons who use OIAS do so for purposes of exploration. Curiosity about the search process and satisfaction with new ideas and alternatives pointed out by the System are consistent findings borne out by the Portland study and the Lane Community College study. Thus, System usage enriched the occupational decision-making process by stimulating exploratory activity. Results of the Portland study indicated that the exploration process was not only enriched but amplified in time. The greater quantity of readily available information allowed for more exploratory activity.

The Portland study, which included a high proportion of disadvantaged persons, provided evidence that disadvantaged persons tend to follow a distinctly different decision-making process. "Many disadvantaged clients claim to be job seeking and thus seem to be more decided and definite about their occupational choices, whereas the majority of non-disadvantaged clients used OIAS to help decide what occupation to follow." The disadvantaged saw the purpose

---

[31] Ross, Effectiveness of Two Systems: Analysis, p. 36.

[32] Weick, Pilot Use in Three Portland Offices, p. 6.

for using OIAS as confirming a prior decision; non-disadvantaged saw it as information gathering for long-term planning and decision making.[33] Non-disadvantaged persons are more aware of the variety of occupations and the complexity of the choice process, and are more receptive to "planning." Disadvantaged persons in general have less occupational information, they form their choices from a much more restricted range of alternatives, are much more definite, and have less patience with planning.

SUMMARY

Delivery of CIS information to individuals involved in career planning is filling definite needs and having significant impact. While there has been no attempt to measure the labor market behavior of career information delivery system users, there is ample and significant evidence of impact on individuals involved in career planning. Since the information is received through a delivery system, it is difficult to separate the impact resulting from information content from that created by the delivery process. However, extensive evaluation of System usage has assessed both elements. The System is usable by nearly any client, attractive and effective with a broad range of kinds of clients, and satisfies their information needs. The individual chooses the amount of information received from the total amount potentially available in the System. Satisfaction with the quantity, quality, and format of the information received is consistently high with the vast majority of persons using the System. System users not only get accurate, relevant occupational information, but also indirectly learn about the occupational exploration and career decision-making processes. The delivery systems installed in the schools have had continued high volume usage over time but have had only a moderate effect on instructional programs. While the main impact has occurred in school settings, since this was where most CIS staff effort was concentrated, pilot testing in a variety of settings has found the System effective with Employment Division clients, Vocational Rehabilitation clients, NYC and WIN enrollees, elderly persons, residents of a correctional institution, college graduates, disadvantaged persons, and the general public. Three major observations of the effects of the delivery system on the career planning process include the following: 1) not everyone wants counseling; some mainly want occupational information; 2) exploration is a distinct step in the career decision-making process; and 3) disadvantaged persons in general follow a distinctly different decision-making process than non-disadvantaged persons.

---

[33]Weick, Pilot Use in Three Portland Offices, pp. 51-53.

CHAPTER VII

FINANCIAL CONSIDERATIONS

Two principles underlie the financial side of the Career Information System's development. One is that the Career Information System will devote its resources to activities that will bring together various unrelated research and information activities into a "system", with a special emphasis on the delivery of information to individual career decision makers and manpower program planners. Thus, emphasis is placed on information development and delivery rather than on original research. The second principle is that the System should be developed in such a way that it can be sustained in the long run by the institutions it serves. Attention to this principle prompts attention, particularly in the early stages, to activities which directly address the glaring needs of school and agency clientele for efficient and attractive delivery of the most essential types of occupational information on an individual institutional basis in preference to activities that require a sustaining budget from a central source.

In considering what should be said about finances, it is important to recognize that a CIS operates among existing institutions, information sources, and services. The CIS attempts to act as an intermediary in bringing those pieces together and filling gaps in order to complete a system. It is appropriate that this report deal with the incremental costs of completing that flow of labor market information from data producers to decision makers. This chapter will therefore discuss the financial aspects of the activities undertaken by the Career Information System itself. These are obviously not full-cost estimates, either to the participating institutions or to society, nor is it a cost-benefit analysis. On the one hand no attempt is made to estimate the costs to existing data-producing agencies of their ongoing research activities which are utilized by CIS, for those activities were not instituted for CIS. Obviously, termination of those activities would at least create major new types of data development costs for CIS itself if not make such a system both financially and technically infeasible. A parallel situation exists with regard to population-serving institutions. CIS does not provide direct counseling services even though they are an integral part of the total information delivery system.

Just as this chapter does not constitute a complete cost analysis, so there is no attempt to estimate the very real economic costs attributable to the current "non-system" or the savings which will be achieved from coordination and gap closing. There is ample evidence, some of it cited in Chapter II, for the proposition that the extent to which there is no system there are substantial social costs. It also results in significant under-utilization of much of the occupational labor market knowledge which is developed.

While this chapter does not attempt to answer those larger questions, it does present an analysis, on the basis of experience to date, of the incremental direct costs involved in efforts to complete the linkages between data producers and decision makers.

INFORMATION DEVELOPMENT COSTS

Acquiring Specific Data

Acquiring data for use in the information system takes essentially three forms: (a) the initiation and maintenance of continuous data flows from data-producing agencies to the CIS; (b) identification of sources such as libraries which are more efficiently used elsewhere than maintained at CIS; and (c) sources which must be developed and utilized as part of the information development process itself. The second involves little or no out-of-pocket cost to CIS, while principal costs of the latter are staff costs and will be discussed in the next section dealing with information development costs. Thus, discussion here will center on the first type.

Developing and maintaining even a small special purpose library such as required by a CIS involves management and materials acquisition costs. In this instance, start-up costs were quite significant. As was noted in Chapter III, it was necessary to design a library filing system, undertake substantial ordering of materials, catalog both the new and the sizeable existing inventory of materials, formalize materials acquisition and review procedures, and familiarize the staff with the use of the library. All of this required approximately three man-months, spread over a nine-month period. Largely because CIS has been able to obtain the Job Bank Openings Summaries and receives some other reports in microfiche rather than hard copy format, the office purchased a microfilm reader printer, at a cost of about $1,200. There are machines on the market for only a few hundred dollars, but not with high quality image at various magnifications and with a printing capability.

As for ongoing costs CIS is able to rely on other libraries for most journals and books, and many data-producing agencies have tended to make information available at no cost to CIS when they might require reimbursement from others. These facts have kept acquisition costs at the remarkably low level of only a few hundred dollars per year, though this figure would rise with more intensive information development activities, particularly by an expanded program planning effort.

Storage involves no other unusual costs beyond those expected in any such library using open shelves and filing cabinets. There is, of course, need for library file boxes, notebooks, labels, and other filing devices, since much of the information comes in the form of articles, short reports, and data tabulations which are not neatly bound for storage.

Cataloging, filing, and re-filing, as well as ordering materials are ongoing staff costs, which have involved various amounts of staff time, but are expected to require perhaps one-third FTE, nearly all clerical, on a continuing basis.

The other aspect of data acquisition discussed in Chapter III is the continuous contact with data-producing agencies required to maintain and insure complete and consistent flow of information to CIS and to seek additional new sources of labor market and educational information. Regardless of the source and nature of the data, the flow of data to CIS is neither automatic nor continuous. Consequently, in order to have current, and comprehensive manpower data for the effective functioning of the career planning information system and of services to program planners, it is essential that CIS staff resources be continuously committed to the search for and the acquisition of additional labor market information in addition to maintaining the existing flow of data. This is one area in which more staff effort is required than might be expected, perhaps on the order of one-half FTE, distributed among various members of the staff.

One feature of this particular collection should be noted; it involves little computer storage of research data for use by CIS information development staff. This fact is principally attributable to the fact that CIS is currently developing very little original labor market data, and it generally proves more efficient to use the data storage and processing facilities of data-producing agencies than to create duplicate files at CIS. Thus, a system which would attempt to be comprehensive in developing its own data storage capabilities would need to make budgetary allowance for this kind of data storage, manipulation, and retrieval.

The level of library activity described here has proven to be relatively satisfactory, given the ready availability of many costly materials in other more comprehensive libraries. Two general notations should be made, however. One is that the library of available information is seriously incomplete in some areas, not for lack of a library budget, but for lack of information in those critical areas. Most notable, as is discussed elsewhere in this report, is the lack of supply information, the lack of adequate wage information, the lack of substantial information about the relationship of education and jobs, and certain other topics where materials would certainly be purchased if that information were available. One could well expect the library budget to double if the desired information were available for the nominal price of a publication.

Information Development Costs of Individual Career Planning Information

Having discussed the acquisition of data and reports for storage in CIS, we can turn to the matter of actually developing information. These costs are, of course, primarily in the form of staff time, some of which can be viewed as start-up costs while others are the ongoing costs of maintaining the currency of information files. Start-up costs are of two principal types: the development and testing of information maintenance procedures, including the necessary forms and work flow designs, and the building of the information files themselves. Obviously both, though particularly the latter, are a function of several variables, including the number of files, the number of occupations, the number of geographic areas to be covered, and the frequency of the update schedule, to name a few. The importance of taking explicit account of these factors in planning an information maintenance program is described in Chapter III.

The Oregon CIS was extraordinarily fortunate as it faced the task of preparing information files. The Oregon Employment Division already had an exceptionally well-developed program of occupational employment estimates and projections. Skill surveys had recently been updated in both Eugene and Portland, the first two areas where CIS built information files. Two key CIS staff members had occupational labor market research experience with the Employment Division and elsewhere. CIS inherited the information which had been developed under a prior project for the purpose of testing the computerized occupational information system. CIS had the benefit of advice and assistance from the Oregon Employment Division's manpower economists stationed in cities throughout the state. Moreover, CIS information development activities grew gradually from the initial two files, so the staff was not required to build complete sets of files for all the areas of the state simultaneously. Therefore, CIS information development staff were able to devote

a relatively large portion of its time to procedures design and testing rather than file building.

Even so, the 1.5 FTE budgeted for the six-month developmental stage was barely adequate to get the information development program operational. This is partly due to the fact that CIS assumed an on-going information development commitment to Lane County schools in addition to reformatting the information in the existing description files and thoroughly reviewing the other files, which had been developed for testing purposes and not as a foundation for continuing large scale usage.

While CIS start-up activity in this area required about 1.5 FTE plus part-time clerical support, another such project starting from scratch should expect to at least double that initial investment. The development of information for a large number of geographical areas, or the use of in-experience personnel, would require at least a 50 percent lengthening of the developmental stage as well. This matter of staff experience is important in planning such a project, for the labor market contains very few people with the desired profile of experiences. Though many manpower economists have appropriate background, they would require training and experience before reaching high levels of productivity, and training and experience take time.

It seems to many people who are completely unfamiliar with labor market research that, once these files are built, it should be a simple matter to stick in a new figure now and then. As a matter of fact, "sticking in a new figure" is an easy matter, but knowing what figure to stick in is something else again. Occupational labor market information is a perishable commodity that requires skill, sensitivity, and time to develop. Moreover, special care in writing, not only for technical accuracy but for clarity, is also necessary when one is writing for large numbers of people in diverse institutional settings.

Even more than initial information development, maintenance cost is a function of the number of files, occupations, and areas for which information is being developed as well as the detail, accuracy, and currency desired in the information statements.

Despite the very large number of information items which must be maintained in a large system, there are substantial economies of scale possible in such an operation. Certain files and parts of other files can serve whole states or possibly even regions. With time and increased staff (up to a point, of course) methods improve, staff proficiency increases, and there is opportunity for multiple use of data, for example, between career planning information and program planning information development efforts

which reduce average unit cost. In time, too, one would expect an operation like CIS to have some feedback effect on data-producing agencies, making it possible for them to improve the substance or form of their output for this particular purpose, again increasing productivity.

The current career information development program of CIS, as described in Chapter III, requires about five FTE. That staffing level assumes that data are available, that staff are knowledgeable, and that staff can concentrate on this special area of work and will have the benefit of cooperation from data-producing units.

Access to computer files and the daily in-put of new information requires access to a computer terminal. Coupled with demonstrations and other uses of a terminal, these functions require a terminal full-time at a annual cost of about one thousand dollars.

Special Information Development Costs

It may be useful to examine somewhat more closely a few of the particular costs involved in the information gathering activities which are part of information maintenance.

Contacts. Contacts with persons knowledgeable about the occupations is a common way of gathering and verifying labor market information. Typically this is done via telephone, involving both the analyst's time and the telephone toll charges.

As far as telephone toll charges are concerned, the statewide "TEL PAK" and "WATS" services are supported by the University of Oregon where CIS offices are housed and represent a fixed cost to the CIS. It is therefore not costly in terms of telephone tolls for the CIS to do some of its data gathering from various parts of the state by telephone. While actual time on the telephone rarely exceeds ten minutes, locating the best possible source, completing the call, and processing the information typically adds at least another ten minutes to the process.

Newspaper Help-Wanted advertisements. In an attempt to monitor one part of local occupational demand, CIS experimented for a time with tabulating newspaper help-wanted advertisements. The responsibility for classification, tabulation and technical interpretation of these data was assigned to a student research assistant. The assignment is extremely instructive in that it enables the researcher to develop a familiarity with the classification system in a fairly short time period. Because of its instructional value, the task could well be assigned to new staff members.

The time required to process the data was as follows:

TABLE 11

Publication	Average Number of Ads	Time Per Week
Sunday Portland Oregonian	640	3.5 Hours
Sunday Eugene Register-Guard	200	1.25 Hours

Job Bank Openings Summary. The data from this source are provided to CIS already tabulated, so the basic information development cost is nil. However, time is required to maintain statistical series integrity (check on non-arrival of fiche, fill gaps in data, verify or correct apparent data errors) and to maintain graphs and tables. This requires about one day per month.

COMPUTER SYSTEM COSTS

In Oregon the Career Information System has made a practice of contracting for computer services from established educational computer centers. Presently, the occupational information delivery system is operating on five computers at five centers in the state. Three are the Oregon Total Information System (OTIS) which is operated by the Lane Intermediate Education District for schools throughout the state, the Multnomah County Intermediate Education District under the title METCOM for schools in two counties of the Portland Metropolitan Area, and the Washington County Intermediate Education District. In all three the system operates on Hewlett-Packard 2000, models C and F. Terminals are Teletype Model 33's. The programs are currently being re-written by the University of Oregon Computing Center for operation on other equipment, including Xerox, CDC, and PDP at the two centers in state and for some users out of state.

Any computer system capable of supporting a teleprocessing system would be adequate to operate OIAS. Also needed is direct access storage and sufficient main memory to run the OIAS program. On the Hewlett-Packards the OIAS software is written in Time-Shared Basic and requires approximately the following space.

TABLE 12

Computer Space Requirements for CIS Programs

Components	Programs (in words)	Files (in blocks)	Total (in blocks)
OIAS (occupational components)	12,000 (approx. 200 blocks)	4,500	4,700
CIS (occupational and educational components)	16,000 (approx. 200 blocks)	6,300	6,500
Statistics Program (accounting of program and file usage)	3,400 (approx. 25 blocks)	8/user code number for OIAS 17/user code number for OIAS	dependent on number of user codes assigned
Maintenance (UPDATE, DUMP, and other utility programs)	9,500 (approx. 60 blocks)	50	110
Complete System (CIS, Statistics for 50 user institutions, Maintenance)			7,485

NOTE: One block is equivalent to one record.

The minimum operating system requires approximately one-third of the minimum system configuration using one cartridge disc drive. In the computer centers in Oregon, costs of operating the program are not isolated from the costs of operating the entire Hewlett-Packard computers, which include other programs as well.

COSTS OF WORKING WITH USER AGENCIES

The Career Information System is by design a cooperative effort, involving a great many established institutions, particularly client-serving institutions such as schools and social agencies. Neither the development nor maintenance of such cooperative arrangements is cost free, and one of the strengths of the CIS structure is that it provides funds to carry out the essential consultation and in-service

training. There are two major types of costs which need to be examined in this connection. First are the costs of consultation, planning, and in-service training required to make a career planning information service operable in a school or social agency; second are the costs of equipment and materials which are related to the number of users and represent a continuing cost of operating the system.

Start-up costs. The start-up costs can perhaps best be seen by looking at one particular case. Coos County, located in the southern coastal area of the state, is principally rural with lumber, shipping, and agriculture being the main export industries. Coos County has a population of 56,000 and high school students number 4,500.

Discussions with Coos County educators began early in 1972. The CIS Director and another member of the staff spent a day at the county's Intermediate Education District office talking to the superintendent, the Career Education Coordinator, and other personnel. The District's Career Education Coordinator later spent a half-day at the CIS office talking with various personnel and studying the System's operation. During a month in the spring, the System was demonstrated to students and staff at one of Coos County's high schools. CIS absorbed all costs related to the demonstration.

Various phone calls were made through the Summer of 1972 discussing costs, ways of funding, and various components of the System. In early October, two members of the CIS staff spent a day in Coos County and made a formal presentation to the Coos County School Board to obtain their financial commitment. Support was obtained, and in early December two members of the CIS staff again spent a day in Coos County conducting a two and a half hour in-service training session with school personnel from the eleven secondary schools. An additional day was spent on site in early January visiting several of the schools in an attempt to assist in integration.

To estimate roughly, almost $1,000 was spent in travel, phone calls, computer costs, and staff time in the consultation and in-service training effort for Coos County. The largest portion of this amount, approximately 80%, was incurred in the consultation, planning and decision-making process. This expense is exclusive of the cost of localizing information for that region or developing user materials.

It should be apparent that costs vary substantially from one situation to another, but Coos County is a reasonably typical situation for a first year effort. The CIS Board has taken a strong posture in favor of thorough in-service training so costs can be expected to continue. In every area of the state, new in-service training sessions have been held each fall that the System has been in effect in order to insure that old coordinators are brought up to date on System developments and that new coordinators are well prepared to handle their responsibilities.

Costs Related to Numbers of Users

Certain costs are directly related to the number of individuals who use the System, i.e., the delivery system costs.

Computerized version. Although terminal and telephone rental costs are fixed, user costs depend premarily on the intensity with which individual students and clients use the System. Evaluation data indicate that students use the System two or three times per school year for a total of 20-30 minutes per student. Employment Service clients typically used it only once during the pilot testing and averaged about 40 minutes with it.

It cost a "typical" school or agency which installs a terminal and uses the computerized version of the System with approximately 1,500 users about $2.00 per user per year for terminal costs, line charges, and computer time. Computer delivery system costs are:

Terminal and modem rental (fixed)	$65/month	$780/year
Telephone line (fixed)	35/month	420/year
Installation charge (one time only)		175
Computer time (variable) (1,500 users x 25 minutes/user x $3/hour)		1,875/year
Delivery system total (including one-time installation fee)		$3,250/year ($2.17/user)

An institution which utilizes an existing terminal for the delivery of occupational information adds only the cost of computer time, and that averages approximately $1.00 per user.

To these costs the user institution must add user service fees which average 47 cents per user per year (based on $1 for the first 3,200 users and 30 cents each thereafter) when the savings from group agreements is considered.

Needle-sort version. The occupational needle-sort version of the System carries with it three costs; the costs of the needle-sort deck, the printouts of occupational and educational descriptions, and distribution. The needle-sort decks and education files last a year, while quarterly updates of the occupational descriptions are required. Classes or projects serving a very small number of users can get this version of the System for less than $2 per user per year, and that cost drops well under $1 as the number of users reach the optimum for a single deck of cards.

None of these figures, of course, includes the costs of information development, consultation and in-service training, or continued system development which are described elsewhere.

FEE SCHEDULE FOR SERVICES

Both the plans for and the implementation of the Career Information System have been based on the proposition that agencies who utilize the System should provide the financial support for it as well. This strategy is based on both practical and theoretical considerations: no state agency has funds to fully underwrite such an operation, and user agencies can be expected to demand higher performance of the System if they are paying its costs.

Fees for Career Planning Information System

In developing fee schedules and working with schools and agencies, CIS has made no attempt to recover developmental costs when such developmental costs were borne by a grant-making agency. In calculating the costs of establishing the continuing service to user agencies, the CIS Board has adopted the policy utilizing existing information, delivery, and staff development services whenever effective, feasible, and otherwise consistent with the goals of the System. Thus, the CIS charges user agencies only the cost of goods and services, (including such items as information development, delivery system operation and management, evaluation, and System refinement) required for the effective delivery of services agreed upon.

To implement this general policy, the CIS Board adopted the following fee schedule for the developmental stages of the project: fees are to be figured on the basis of $1.00 per estimated potential user up to 3,200 users in an institution, and 30 cents for each additional user thereafter. The interview cassettes produced by the project are made available to user institutions for the cost of reproduction, $1.00 per cassette. Additionally, user institutions must budget for the costs of the delivery media, either computer costs, or needle-sort systems. (See the following page for pricing schedule.)

There are many considerations concerning school and agency budgeting procedures and timetables, as well as CIS cost factors, which underlie this schedule. There is a need to respond to extreme disparities in program size, ranging from as few as twenty users in some situations to tens of thousands in others. There is also a need to utilize budgeting concepts which are familiar to user institutions. Additionally, there is a need for the fee schedule to reflect the flexibility of the information system. This particular schedule was adopted in order to encourage institutions to make the fullest possible use of the System and to group together for System use, while still taking account of its costs.

Information development, consultation, and in-service training. In this schedule, 70 cents of the $1.00 which is charged for the first 3,200 users in an institution goes toward the cost of basic CIS services, i.e., information development, in-service training, etc. (Materials cost approximately 30 cents per user.) Costs of providing such services are obviously not infinitely variable with the number of users, and it is also apparent, as has been discussed numerous times previously in this report, that there are substantial economies of scale to be achieved. Though it is difficult to estimate and to allocate these costs on a per user basis, the extreme size variability of different users requires some such approach.

PRICING SCHEDULE 1974-75

SERVICES AND DELIVERY SYSTEMS AVAILABLE TO CIS USERS

The following schedule applies to all users of CIS services, including I.E.D.'s, community colleges, individual schools and social agencies.

SERVICES	DELIVERY SYSTEMS
CIS Services $1/user for first 3,200 estimated potential users; $.30/user for each user over 3,200 ($100 minimum).	Users of the OIAS computer system also pay OTIS or METCOM for computer services.
CIS service includes: 1) CIS Coordinator's Handbook(s); 2) Updated and localized occupational and educational information; 3) CIS Newsletter "Update;" 4) CIS In-service training; 5) User Handbooks; and 6) Follow-up services.	Occupational Needle-Sort at $45 each (Includes one set of occupational and educational printouts). Additional Occupational Description Printouts at $20 per annual subscription* (price for System users).

LIMITED SUBSCRIPTION SERVICE AVAILABLE TO LIBRARIES, INFORMATION CENTERS, AND OTHERS

Occupational Description Printouts
at $50 per Annual Subscription

*Annual subscription includes three issues of the local area occupational description printouts.

Inflation and the addition of the education components will require an increase in 1975-76, recently set at $1.20 for the first 3200 users, and 48 cents for each additional user.

It is clear that this schedule does not provide full support for these services in the early stages when the number of users is limited; thus, it is necessary to subsidize information development and other services in the early stages in order to maintain the desired level of quality.

User materials. Printed materials that are consumed in the process of using the System consist principally of User's Handbooks and reports which are purchased for use with the System. These materials cost about 20 cents per user. As can be seen, the above schedule provides for full cost pricing of the materials.

Delivery media. In addition to CIS services and user materials the System requires delivery media, meaning either computer services or needle-sort deck and computer printouts. The principle being followed in regards to these costs is that users pay the full cost; in the case of computer services they contract directly with the computer service bureau. The fee schedules of the two major computer service bureaus and the fees related to the needle-sort version of the System are described below.

System delivery costs are highly dependent on the location and the delivery method chosen. For those institutions choosing the computer terminal as their major delivery medium, there are three costs to consider: terminal time (the amount of time the terminal is accessing the computer), phone line charges, and rental of the terminal itself.

In the Portland area a school or agency can contract with the Multnomah County Intermediate Education District for unlimited computer time at a cost of $2,750 for 9 $\frac{1}{2}$ months or $3,250 for 12 months. Agencies and schools which have a limited need can obtain computer time at $4 per hour. Experience has shown that an individual will use about one-half hour of computer time per year (though he might spread that time over several uses). In any situation, the user institution must also pay telephone line costs and terminal rental charges. If an additional unlimited business phone line is needed, the cost is $19.75 per month in the Portland area; a terminal and its related equipment rents for $65 per month.

In Eugene and other parts of the state, users access the System via a computer at Oregon Total Information System (OTIS). OTIS does not have a flat rate contract available for their customers; instead they charge $4 per terminal hour for agencies using only the Career Information program, $3

for those who also use OTIS accounting programs. Line charges and terminal rental range between $85 and $150 per month, depending on the distance from the OTIS computer.

The occupational needle-sort version (needle-sort deck and printouts) enables the CIS to serve schools and agencies whose size, location, budget, or preference prohibits the use of the computer system. The CIS supplies the needle-sort at cost to its users. About $25 is spent to produce one card deck and about $5 is needed to produce each book of occupational descriptions. The CIS produces new books of descriptions three times a year. The yearly rental for the occupational needle-sort system is currently set at $45. The policy of renting this delivery device was formulated to insure the updating of cards and exchange of the occupational descriptions.

In summary, the fee schedules described previously provide full user support of materials and delivery media, and appropriately 80 percent of the crucial information development, consultation, in-service training, and research and development costs.

FINANCIAL SUPPORT FROM USER AGENCIES

CIS has experienced what can only be described as a truly remarkable increase in service. Taking over from a small experimental project, CIS developed a clientele with 15,000 persons during fiscal year 1972 and increased that number to 78,000 in fiscal year 1974. Firm commitments by user agencies provide for 142,000 for fiscal year 1975. Mostly these figures represent people who would not otherwise have received comprehensive career information. These figures seem more impressive when one realizes that there are only about 160,000 students in grades 9-12 in the state, and they seem all the more substantial when one realizes that population serving agencies are not only adopting and using the service, but also supporting it financially. The numbers of users and revenues produced by the current fee schedule are shown in the following table. In examining these figures it should be remembered that they primarily represent secondary school and community college populations (for details see Chapter V).

TABLE 13

GROWTH OF CIS USAGE

YEAR	NUMBER OF USERS	REVENUE FROM USER FEES		
		CIS* SERVICES	DELIVERY COMPONENTS**	TOTAL
FY 1971	1,000 experimental	-0-	-0-	-0-
FY 1972	15,000	$8,000	$12,000	$20,000
FY 1973	30,000	15,000	42,000	57,000
FY 1974	70,000	36,000	90,000	126,000
FY 1975***	142,000	72,000	200,000	272,000

* Information development, materials, in-service training
**Primarily costs of computer services
***Includes commitments and firm plans by user agencies, as of October 1974

Prospects for Complete Users Support

There are a number of reasons to be encouraged about the prospects for support of such a System by population serving institutions. The growth described above is certainly one reason. It is especially encouraging that this growth can occur under a fee schedule which has population serving institutions covering most of the major costs of the System.

Moreover, there is substantial opportunity for further expansion. In Oregon, the four-year colleges and universities and the social agencies are as yet participating in only very minor ways in CIS, and most of those students and clients are also in serious need of career information.

There are other reasons besides recent growth trends and substantial additional areas of need to be optimistic about CIS. Efficiency accrues to skill and experience and economies of scale can have a serious impact on costs. Though growth requires staff expansion, the output per man can reasonably be expected to rise as such a System expands.

Despite these very encouraging signs, self-sufficiency may always be difficult to achieve in a small state. The growth rate that has been recorded in public schools cannot be repeated in that industry. Reaching the remaining high school student will be a slower process because they are scattered over a geographic area roughly the size of New England; most are served by very small schools, and most of those schools do not have access to computer services.

The prospects for involving various major social agencies in the System are still unclear. Certainly there are large numbers of people served by those agencies who need such information and certainly the participation of those agencies is very important to the success of the System. But there is reason to believe that some, at least, may need specialized information or yet undeveloped delivery strategies which will add to the costs of serving those particular populations. These problems are compounded by the tradition of some social agencies that all information and materials are generated internally. Much time and imagination will be required to involve those potential user agencies and institutions in the CIS effort.

Financial Alternatives for CIS

States planning career information systems may want to examine financial plans that are not completely based on user support. One of those possibilities is partial state funding either through separate state appropriation or as a line item in the budget of one or more state agencies. Another form of state support is for certain state agencies to provide staff support to CIS, for example, by the Employment Division carrying a substantial share of the responsibility for the development of local area data or the state Department of Education providing more of the consultation and in-service training which is required for the CIS to be effective.

Another possibility is to establish the CIS as a regional rather than just a state operation and thus spread some of the fixed costs over still larger numbers of users. This might be a feasible alternative, though it has not as yet been examined in any detail.

APPENDIX A

CONSTITUTION

ARTICLE I

NAME

The name of this consortium shall be CAREER INFORMATION SYSTEM.

ARTICLE II

GOALS AND OBJECTIVES

The goals and objectives of this consortium shall be to foster development and use of career information, to provide practical means of direct access to current career and labor market information in forms which are meaningful to individual students and clients, and to promote integration of such information into schools and social agencies in this state of Oregon.

The consortium is founded and shall exist as a non-profit organization.

ARTICLE III

CONSORTIUM MEMBERSHIP

Section 1. Membership in the consortium of any individual, agency or institution shall be by formal invitation of the Career Information System Board.

Section 2. Membership may be extended to representatives from secondary and higher educational institutions, social service agencies, Career Information System user agencies, and any other person, agency, or institution designated by the consortium's Board.

Section 3. Membership may be rescinded by two-thirds vote of the Career Information System Board.

ARTICLE IV

CAREER INFORMATION SYSTEM BOARD

Section 1. Nomination. Candidates for the Career Information System Board shall be nominated by representatives of general membership at the first regular September meeting.

Section 2. Election. Members of the Career Information System Board shall be elected in secret ballot by a majority vote of the Board membership at the first regular September meeting. The voting power of each Board member is equal to the number of positions to be filled. Newly elected officers shall take office at the next regular meeting following their election.

Section 3. Composition. The Career Information System Board shall consist of no fewer than seven members, with representation from career counseling, career education, manpower research, school and social agency staff training institutions, major state social agencies, career information user agencies, and individuals with special interest or expertise as determined by the Board. Initially, the Career Information System Board will consist of ten members, who are: Leslie L. Adkins of the Oregon Board of Education, John S. Clyde of Churchill High School, Susan K. Gilmore of the University of Oregon, Casmer F. Heilman of Oregon State University, Kenneth D. Hills of Lane Community College, Paul E. Kerr of the Oregon Employment Division, Burl I. Lundy of the Oregon Employment Division, William D. Manley of the Lane Intermediate Education District, Bruce McKinlay of the University of Oregon, Thomas A. Williams of the Oregon Board of Education, and Franklin Zeran of Oregon State University. Board membership may be expanded upon action of the incumbent members.

Section 4. Authority. The Career Information System Board shall have complete authority to establish, modify, or rescind policies of the Career Information System.

Section 5. Tenure. The term of office for a Board member shall be three years with no Board member eligible to serve more than six consecutive years. The terms of the members of the Career Information System Board shall be staggered. Initially and as determined by chance, three of the members will serve one year terms, three will serve two year terms, and four will serve three year terms.

Section 6. Resignation. Members of the Board may resign by giving written notice to the Board Chairman. (Amended by Career Information System Board of Directors January 8, 1975)

Section 7. Removal. Upon failure to attend three consecutive regular meetings or two-thirds of all meetings during the immediately preceding twelve months or portion thereof that the member has been in office, the Chairman shall declare that position vacant.

A member of the Career Information System Board may be removed by two-thirds vote of the Board membership. (Amended by Career Information System Board of Directors January 8, 1975)

Section 8. Reinstatement. A person who has been a Board member may be reinstated by a two-thirds vote of the Board membership. (Adopted January 8, 1975)

Section 9. Leaves of Absence. The Board may approve extended leaves of absence. (Adopted January 8, 1975)

Section 10. Filling Vacancies. The Board may appoint a representative from any consortium member to complete an unexpired term vacated by resignation or removal. (Adopted September 25, 1973)

ARTICLE V

BOARD OFFICERS

Section 1. Positions. A chairman and a vice-chairman shall be nominated and elected by the Career Information System Board at the first meeting in October.

Section 2. Nominations. Nomination for Board Officers shall be by nominating ballot. If one member receives two-thirds of the nominating votes for a Board office, he is elected. If no member receives two-thirds or more of the nominating votes, the two members receiving the highest number of votes shall be so nominated. Ties will be broken by chance. Nominations shall be accepted from the floor.

Section 3. Election. Election to the office will be determined in a secret ballot by a majority vote of the Career Information System Board members present.

Section 4. Term of Office. The term of office shall be one year with no member serving more than two consecutive terms in each office. Vacancies in either position are to be filled by Board action.

Section 5. Duties. The Chairman of the Board shall preside over Board meetings. With the director he shall be authorized to execute legal documents on behalf of the Board. In his absence, the vice-chairman shall assume his duties.

Section 6. Removal. Board members may be removed from the office of chairman or vice-chairman by a two-thirds vote of the Career Information System Board.

ARTICLE VI

DIRECTOR

Section 1. Duties. The Director shall be the administrative head of the Career Information System. He shall be appointed for an indefinite term and may be removed by a majority roll call vote of the full Career Information System Board.

Section 2. Board Membership. The Director shall serve as an ex officio, non-voting member of the Career Information System Board. He shall keep the Career Information System Board advised at all times of the affairs and needs of the Career Information System.

Section 3. Personnel. The Director shall appoint or remove appointive personnel from positions within the Career Information System.

Section 4. Purchasing. The Director shall act as purchasing agent for the Career Information System.

Section 5. Reporting. He shall be responsible for preparing and submitting annual budget estimates and such reports as the Career Information System Board requests.

ARTICLE VII

COMMITTEES

The chairman of the Career Information System Board and/or the Career Information System Board may establish committees deemed appropriate. Members appointed to committees need not hold regular membership and may be personnel from user agencies of the Career Information System.

ARTICLE VIII

MEETINGS

Section 1. Regular Meetings. Regular monthly meetings will be held at a time and place agreed upon by the Career Information System Board.

Section 2. Special Meetings. Special meetings may be called by the chairman or three members of the Career Information System Board.

Section 3. Quorum. A majority of the Career Information System Board will constitute a quorum.

Section 4. Agenda Items. The Board chairman, in cooperation with the Director, shall prepare an agenda. Any Board member may place an item on the agenda by notifying the chairman. Unless five days prior notice has been given of the pending consideration of an agenda item, any member of the Career Information System Board may cause that item to be held over to the next regular meeting.

Section 5. Open Meetings. All regular and special meetings of the Career Information System Board shall be open to the public, except that the chairman, at his discretion, may close the meeting for the consideration of personnel matters.

Section 6. Parliamentary Authority. Robert's Rules of Order will be the rules for the conduct of Board meetings, in so far as they do not conflict with this constitution.

ARTICLE IX

AMENDMENTS

This constitution may be amended by two-thirds vote of the Board membership.

ARTICLE X

DISSOLUTION

This consortium may be dissolved by two-thirds roll-call vote of the full Board membership provided ten days written notice of intent has been given all members. If reasonable attempts to obtain attendance for voting on dissolution have failed, the chairman may conduct such a vote by mail.

Agreed to and Adopted
January 10, 1972

Office of the Director
242 Hendricks Hall
University of Oregon
Eugene, Oregon 97403
(503) 686-3822

APPENDIX B

Career Information System

AGREEMENT BETWEEN THE
COOS INTERMEDIATE EDUCATION DISTRICT
AND THE CAREER INFORMATION SYSTEM
1974-75

The following agreement represents considerable commitment by both parties to promote and service an occupational information system in Coos County during the 1974-75 school year. This agreement also implies an effective working relationship between both parties to communicate on important developments in the system.

CAREER INFORMATION SYSTEM'S RESPONSIBILITY:

Program and File Format:

The CIS will make available the following files and programs for the use of approximately 4,400 students in Coos County.

Descriptions (DESC) file updated, and localized to Coos/Curry County;

Education and Training Opportunity (EDUC) file;

QUEST program (computerized and needle-sort).

Materials:

The CIS will deliver the following materials for use by 4,400 students and supportive staff.

a) Occupational Books -- one set for each school designated to use the System;
b) User's Handbooks -- 4,400 copies.

Information Development and Maintenance:

The CIS will deliver current and accurate occupational information files that reflect the labor market in Coos County.

Evaluation:

The CIS will assist the Regional Career Education Coordinator with an evaluation of the System's effectiveness for 4,400 students.

In-Service Training:

a) The CIS will cooperatively plan group in-service training sessions with Dr. Ron Olsen. This session should include school administrators, school coordinators/counselors, and any other interested personnel from user schools. This group training will precede activation of the system in the county.

b) The CIS will be available as a resource for follow-up at each school using the system upon the request by the Regional Career Education Coordinator.

COOS IED's RESPONSIBILITY:

1. The Coos IED estimates that approximately 4,400 students will be served by the CIS information files and programs during the 1974-75 school year.

2. Coos agrees to commit $2,995.00 to the CIS by November 1, 1974, for staff in-service, information development and maintenance and user materials for approximately 4,400 students to be served during the 1974-75 school year. This is consistent with the pricing policy which has been established by the CIS Board of Directors.

3. Each school in the County will accept financial responsibility for renting the Occupational Needle-Sort System from CIS. The rental charge is $45 each per school year.

4. The CIS files and programs are for the sole use of students, teachers, and counselors in designated schools in Coos County during the school year 1974-75 and any subsequent school year during which an agreement is effective. A designated school is one whose staff has had CIS approved in-service training, adequate user materials and access to the System.

5. The Coos IED agrees that no charges shall be made to individual students, faculty, or counselors for the use of the System.

6. Standards for Use: The "Standards for Use...," Appendix A, as adopted by the CIS Board will be the basis of operation in the designated schools.

7. Dr. Ron Olsen will place in each user school all materials for use with the system.

Violation of the above terms and conditions shall constitute a breach of this agreement. Upon such breach of agreement and after a thorough review of the breach by both parties, either party may terminate this agreement upon 10 days written notice to the other.

This agreement expires June 30, 1975.

Upon expiration of this agreement or upon termination for breach of the agreement, the Coos IED agrees to return to the Career Information System any unused copies of the user materials, information files, cassette tapes, and other materials obtained or developed for the purpose of implementing the occupational information system.

FOR THE CAREER INFORMATION SYSTEM

Bruce McKinlay, Director

Date

FOR THE COOS COUNTY IED

Dr. Thomas Weiler, Superintendent

May 22, 1974
Date

Ratified by the CIS Board

Leslie Adkins, Board Chairman

8-28-74
Date

STATE OF OREGON ACTING BY AND THROUGH THE STATE BOARD OF HIGHER EDUCATION ON BEHALF OF THE UNIVERSITY OF OREGON

By
W.N. McLaughlin, Contracting Officer, Director of Business Affairs, University of Oregon

FOR UNIVERSITY OF OREGON

D.C. Howard, Research Financial Administrator

Office of the Director
247 Hendricks Hall
University of Oregon
Eugene, Oregon 97403
(503) 686-3872

APPENDIX C

Career Information System

STANDARDS FOR USE OF THE OCCUPATIONAL INFORMATION ACCESS SYSTEM OR OCCUPATIONAL NEEDLE-SORT SYSTEM

The Career Information System (CIS) has the responsibility for providing practical means of direct access to current career and labor market information in forms which are meaningful to individual students and clients and for encouraging integration of such information into schools and social agencies in the State. Two of the methods available through the CIS are the Occupational Information Access System (computerized) and the Occupational Needle-Sort System (manual).

Both systems are good tools, but, like most tools they are designed to do a particular kind of job, and they work best when they are used for that purpose. This set of "Standards" is intended to help user schools and agencies understand the System and to plan uses that will complement their other activities.

The purpose of CIS as the name implies, is to make occupational labor market information more accessible for career exploration. To achieve this end, the CIS:

--helps the user identify relevant occupations to explore.

--helps the user find publications which will give him facts about occupations he wants to know more about.

--presents personal visits as well as printed materials to meet the different needs of different users.

--utilizes delivery systems that can be operated by inexperienced students and other individuals. They do not require staff assistance, though parts of the System fit easily into counseling and instructional situations.

--covers all of the major occupations in the area as well as significant ones not found locally.

--updates information immediately as new or revised data become available.

--establishes a statewide cooperative to reduce costs and insure quality information to individual schools and agencies.

The delivery systems consist of several semi-independent components, so they have a certain built-in flexibility to adapt to different user needs and different institutional resources. The basic components are:

QUEST Program: Helps users identify occupations to explore and helps them locate appropriate types of information about occupations. (Computer and needle-sort versions available.)

DESCRIPTION: Brief, 300-word summaries about each of the occupations in the System (teletype and pre-printed "dumps" are available).

OCCUPATIONAL BOOKS: The systems refer users to the most pertinent general and specific publications about particular occupations.

EDUCATION: Lists available post-secondary occupational preparatory programs (teletype and pre-printed "dumps" are available).

VISITS: Give more intimate exposure to the occupation. Arrangements are made for people in occupations to talk about their jobs and to show others the work place.

The System has been tested in a number of locations: University of Oregon Counseling Center, Churchill High School, five Employment Division offices, Lane Community College, Vocational Rehabilitation Division Office in Eugene, Shasta Junior High School, the Valley River Shopping Center, and Coos County high schools.

Among other things, these tests indicated certain rules for effective use of the System. (Copies of the individual evaluation reports are available on request.)

Rules for System Use

1. The following table indicates four ways in which System components can be used to meet particular needs. Prospective user institutions should analyze their needs to determine which purposes they want the System to serve.

USES OF CIS COMPONENTS

TYPE OF USE	Principal Component	Other Required Components	Optional Additional Components
1) Identification of Occupations for Exploration	QUEST	DESCRIPTIONS OCCUPATIONAL BOOKS	VISITS
2) Introduction to Occupations	DESCRIP-TIONS	OCCUPATIONAL BOOKS	VISITS
3) Introduction to Educational & Training Opportunities	EDUCA-TION	DESCRIPTIONS OCCUPATIONAL BOOKS	VISITS
4) Counselors' Reference to Selected Occupational Materials	OCCUPA-TIONAL BOOKS		DESCRIPTIONS EDUCATION

The requirements listed in the preceding table are based on experience which has shown, for instance, that the QUEST questionnaire and list of occupational titles should not be used by itself. The questionnaire contains several pertinent occupation selection criteria, but other information, for instance job opportunities and licensing requirements, is essential to a sound occupational choice. Users would have access to and be encouraged to use some additional material--descriptions, books, visits, etc.--to get information about the occupations they want to explore. Any institution using the QUEST part of the System must plan to utilize at least the DESCRIPTIONS and OCCUPATIONAL BOOKS.

2. Institutions should incorporate the System into ongoing courses and counseling practice, wherever appropriate and feasible.

It is advantageous, though not required, that they also make the System available for independent student/client use. Experience has proved that the System receives effective use when it is open to independent client/student usage, but its resources should be integrated into ongoing instructional and counseling programs.

3. Batch processing of the QUEST questionnaire, whereby students receive only a printout of their QUEST list without an opportunity to make changes, inquire why not, and immediately retrieve descriptive information about the occupations, is not authorized. A school or agency who desires to use this process should obtain authorization from CIS.

4. In-service training of staff is a prerequisite to use of the System. Effective use of the System requires an understanding of: System components, sources and use of information, mechanics of System use, discussion of System applications within the particular setting. Staff who will use or be responsible for the use of the System in individual schools and agency offices must attend a training program which has been approved by the CIS.

5. Each user institution should designate one person as the coordinator for the institution. This will provide a contact point for communication between the institution and the CIS staff.

6. Current local, regional, and national occupational labor market information is at the heart of the System. Providing inaccurate or outdated information is a serious misuse of the System and a disservice to students. User schools and agencies must support an adequate program of information maintenance by helping to pay the information development costs of CIS, which operates such an information maintenance program for the System. (Design of the System was financed by the U. S. Department of Labor, Manpower Administration, so user agencies are not charged for any of the initial developmental costs. However, the Labor Department is not underwriting localized operation of the System beyond certain minimum testing, so operating costs must be borne by user institutions.) These costs will include:

For the Computerized Occupational Information Access System

I. terminal costs
   installation
   telephone connection
   operating costs (teletype equipment rental, computer use charge)

II. appropriate printed materials (user questionnaires, occupational books, etc.)

III. share of updating costs (continuous information maintenance and system modifications)

IV. agency staff training and program evaluation

For the Occupational Needle-Sort System

I. needle-sort cards, box and needle

II. appropriate printed materials (user questionnaires, occupational books, DESC and EDUC dumps, etc.)

III. share of updating costs (continuous information maintenance and system modifications)

IV. agency staff training and program evaluation

7. CIS materials are copyrighted and remain the property of the Career Information System. They may not be duplicated by user agencies without the written approval of the CIS Director.

8. User agencies and schools employing terminals for access to the System need to make plans for compatible scheduling. For OTIS users, computer "time-lock" security procedures and other security measures are available and are the responsibility of the school.

9. Both systems are still being tested and modified, and new applications may be tested. Experimentation is encouraged, provided it is conducted with evaluation and with approval by CIS staff. However, the above requirements have proven to be essential, and any institution using the systems must observe these requirements unless other arrangements are made in advance. Unauthorized departure from these standards will be viewed as a breach of the agreement and will result in termination of System availability.

Revised 11/71
Adopted 11/15/71
Revised and Adopted 8/73
CAREER INFORMATION SYSTEM

Office of the Director
247 Hendricks Hall
University of Oregon
Eugene, Oregon 97403
(503) 686-3872

APPENDIX D

Career Information System

LINN-BENTON IN-SERVICE

May 21, 1974
8:30 - 10:00 AM

OBJECTIVES:

1. to familiarize counselors and career education personnel with CIS' origin and operations
2. to give all participants "experience" or first-hand impressions of the CIS delivery systems
3. to explain fully the information files of CIS
4. to inform participants of how to get the system started
5. to inform participants of the process of ordering and obtaining materials for next fall

AGENDA:

1. "Hands-on" experience
2. CIS background
3. System components
   --occupational descriptions
   --educational descriptions
   --QUEST
   --other information files
4. Starting the System
   --responsibility of the school coordinator
   --location of the System
   --publicity to students
   --orientation of staff
   --"Standards for Use"
   --System evaluation
5. Technical Assistance
   Burr Fancher - Linn-Benton IED (926-8621)
   John Clyde - CIS (Eugene, 686-3872)

APPENDIX E

Major Organizations Producing Occupational Data

A career information system can establish liaisons with a large number and variety of manpower data-producing as well as data-using agencies. (Oregon examples are illustrative.) Some of the most useful include:

1. Personnel departments of large cities and counties, and large private firms.

2. Councils of Government and other regional planning bodies.

3. Career education departments of county education districts.

4. Career education directors and coordinators, counselors, program planners and other administrators of many local school districts and community colleges.

5. The Career Education, Student Services, and Teacher Certification Divisions of the State Board of Education.

6. The State Education Coordinating Council.

7. The State Education Association.

8. Local manpower economists, personnel of the Research and Statistics, and Occupational Analysis and Testing Sections of the State Employment Security Agency.

9. Apprenticeship and Training Division.

10. The Office of Institutional Research Education, the Office of High School Relations, and various registrars, deans, and department heads of institutions of the Oregon State System of Higher Education.

11. The State Economic Development Division.

12. The Federal Cooperative Extension Service.

13. The Program for the Aging, Economic Opportunity Office, and the Governor's Manpower Planning Council.

14. Personnel Division of the State Executive Department.

15. The Center for Population and Research and Census, Portland State University.

16. The Public Welfare and Vocational Rehabilitation Divisions.

17. The Bureau of Governmental Research and Services, Bureau of Business and Economic Research, and Institute of Industrial and Labor Relations of the University of Oregon.

18. The U.S. Employment Service, Manpower Administration, U.S. Department of Labor.

19. The Office of Federal Contract Compliance and Women's Bureau, Employment Standards Administration, U.S. Department of Labor.

20. The National Science Foundation.

21. The Division of Vocational and Technical Education and National Center for Educational Statistics, U.S. Office of Education.

22. The Federal Reserve Bank.

23. State Licensing Boards.

24. Professional Associations, Trade Associations and Unions.

25. B'nai B'rith Career and Counseling Service

26. The Career Education Program, National Institute of Education.

27. National Center for Health Statistics, Public Health Service, U.S. Department of Health Education, and Welfare.

28. Bureau of Health Manpower Education, Public Health Service, HEW.

29. The Division of Labor Statistics and Occupational Outlook, Office of Wages and Industrial Relations, Division of Occupational Wage Structures, Division of Employment and Unemployment Analysis, and others of the Bureau of Labor Statistics, U.S. Department of Labor.

APPENDIX F

Revised Classification System for CIS/MIC Library

I - GENERAL

I-A	General Occupational Information, n.e.c.
I-A-1	Occupational and Industrial Definitions and Classifications
I-A-2	Occupational Safety and Health, Workmen's Compensation
I-A-3	Legislation and Regulations, n.e.c. (interpretations, effects, proposed policy, etc.)
I-A-4	Wage Rates and Supplements (incl. fringe benefits, pension plans, etc.)
I-A-5	Price Data and Indexes
I-B	Labor Market Research Methodology
I-C	Demographic Data
I-D	General Economic Data, n.e.c. (incl. miscellaneous local, state and regional data)
I-E	Personnel Management (methods, position classifications, problems, etc.)
I-F	Job Search (techniques and related information)
I-G	Periodic Agency Reports
I-J	Bibliographies (data source lists, publication advertisements, etc.)
I-K	Miscellaneous Directories, n.e.c.
I-L	Manpower Planning
I-M	Manpower Programs
I-N	Career Development

II - MANPOWER SUPPLY

II-A	Manpower Supply Sources - Institutional (general labor supply studies)
II-A-1.1	School Directories
II-A-1.2	Catalogs for 4-Year Colleges and Universities (public and private)
II-A-1.3	Catalogs for 2-Year Public Colleges
II-A-1.4	Catalogs for Proprietary Schools
II-A-1.5	School Data, n.e.c. (enrollments, completions, drop-outs, etc.)
II-A-1.6	Career Education Policies and Methods (some sources on DK's or JC's shelves in Room 247 A Hendricks Hall)
II-A-2	On-The-Job Training (incl. apprenticeship programs)
II-A-3	Occupational Transfers (flow between occupations, occupations most affected)
II-A-4	Geographic Migrants (into and out of various areas by occupation and/or by industry)
II-A-5	Unemployment (statistics, trends, analyses, UI claims, etc.)
II-B	Manpower Supply Sources-Special Labor Force Groups (characteristics, manpower programs, etc.)
II-B-1	Youth (persons under 21 years of age)

II-B-2 Older Workers (persons over 45 years of age)

II-B-3 Women

II-B-4 Handicapped (physically, mentally or emotionally)

II-B-5 Indians (Amerinds or Native Americans)

II-B-6 Negroes

II-B-7 Spanish Surname, Persons with

II-B-8 Asians (persons of Asiatic descent)

II-B-9 Poor (persons with incomes near or below poverty level)

II-B-10 Veterans (ex-military)

III - MANPOWER DEMAND
(Current and Future Size, Other Characteristics)

III-A Occupational Information (data on individual occupations and occupational groups)

(III-A-11 thru III-A-98 are filed in Occupational Materials File in top drawer of 4-drawer file in Room 247B Hendricks Hall)

III-A-11 Administrative Occupations

III-A-14 Clerical Occupations

III-A-16 Bookkeeping Occupations

III-A-21 Social Research and Planning Occupations

III-A-23 Engineering and Design Occupations

III-A-26 Laboratory Occupations

III-A-31 Mechanics Occupations

III-A-34 Building Maintenance Occupations

III-A-41 Agricultural and Forestry Occupations

III-A-42 Construction Occupations

III-A-43 Food Products Occupations

III-A-44 Textile and Apparel Occupations

III-A-45 Timber Products Occupations

III-A-47 Graphic Arts Occupations

III-A-54 Metal Working Occupations

III-A-56 Electricity and Electronics Occupations

III-A-59 Other Production Occupations

III-A-61 Transportation Occupations

III-A-71 Stock Control Occupations

III-A-74 Sales Occupations

III-A-78 Food Service Occupations

III-A-81 Health Service Occupations

III-A-84 Social Service Occupations

III-A-94 Protective Service Occupations

III-A-98 Art and Entertainment Occupations

III-B Geographic Area Studies (demand for and supply of manpower within defined geographical areas; may be broken down by occupation, occupational group or by industry)

III-B-1 Oregon (statewide or local areas within the state)

III-B-2 Other States or Regions

III-B-3 United States (the nation as a whole)

III-B-4 Foreign (other nations)

III-C Industry Studies (current and future demand for and supply of manpower for all industries)

III-C-1 Agricultural, Forestry and Fishing Industries (SIC 01-09)

III-C-2 Construction Industries (SIC 15-17)

III-C-3 Lumber and Wood Products Industries (SIC 24)

III-C-4 Other Manufacturing Industries (SIC 20-23, 25-39)

III-C-5 Transportation Industries (SIC 40-47)

III-C-6 Communications Industries (SIC 48)

III-C-7 Utilities Industries (SIC 49)

III-C-8 Wholesale and Retail Trade Industries (SIC 50-59)

III-C-9 Finance, Insurance and Real Estate Industries (SIC 60-67)

III-C-10 Service Industries (SIC 70-89)

III-C-11 Public Administration (SIC 91-97)

APPENDIX G

DEMAND - SUPPLY WORKSHEET FOR SPECIFIC OCCUPATIONS

(Specialty D.O.T. Code)

(Specialty D.O.T. Code)

(Specialty D.O.T. Code)

(Specialty D.O.T. Code)

(Title)	Major Occ. Code		
TOTAL DEMAND			
CURRENT DEMAND			
Current Vacancies			
FORECAST DEMAND			
Expansion			
Labor Force Withdrawals			
TOTAL SUPPLY			
CURRENT SUPPLY			
Unemployed:			
Active File			
Other Sources			
FORECAST SUPPLY			
New Entrants:			
Training Program Graduates			
High School and College Graduates and Drop-outs without Specific Occupational Preparation			
Military Returnees			
Labor Force Re-entrants			
Net In-migrants (geographic)			
Net In-transfer (occupational)			

DEMAND-SUPPLY SUMMARY

Demand equals Supply____ Demand exceeds Supply____ Supply exceeds Demand____

Source: 1967 Lane County Labor Skill Survey, Eugene Research Office, Oregon Department of Employment, January 1968.

Revised: CIS 5/72

DEFINITIONS OF OCCUPATIONAL DEMAND AND SUPPLY COMPONENTS

TOTAL DEMAND

Definition: The total number of new people needed in this occupation now and during the forecast period.

Source: Sum of Current and Forecast Demand.

CURRENT DEMAND

Definition: Demand for additional workers in the occupation at a point in time, in this case the time of the survey.

Source: Current vacancies.

FORECAST DEMAND

Definition: The demand for new workers expected to develop during the forecast period.

Source: The sum of expansion and replacement demand.

EXPANSION

Definition: One component of forecast demand; the net demand for new workers resulting from the change in the number of jobs in the occupation. (May be positive or negative.)

Source: Employer survey or industry-occupational matrix data.

REPLACEMENT DEMAND

Definition: The need for new people to fill positions which will be vacated during the forecast period.

LABOR FORCE WITHDRAWALS

Definition: Those persons who withdraw from the labor market. This item includes people who leave the labor market because of such causes as death, retirement, illness, starting school, keeping house, etc. It does not include people who leave this labor market area for employment in another area.

Source: Calculated for age-sex cohorts from national working life tables.

(NOTE: Net OUT-MIGRATION and net OUT-TRANSFERS may create replacement demand. See "Forecast Supply.")

TOTAL SUPPLY

Definition: The total number of new workers available to fill jobs in a given occupation.

Source: The sum of Current and Forecast Supply
For full discussion of possible methodologies, see Forecasting Occupational Supply (Oregon Employment Division, 1969)

CURRENT SUPPLY

UNEMPLOYMENT

Definition: Those persons presently engaged in active search for employment. This item requires knowledge of the occupational qualifications of the currently available labor supply, the unemployed.

Source:

ACTIVE FILE

The principle source of information about the occupational qualifications of the unemployed is the Employment Service active file and/or unemployment insurance claims file.

OTHER SOURCES

In spite of the fact that the active file is nearly as large as the number of unemployed persons in the area, it is generally recognized that not all unemployed persons are registered with the Employment Service and that non-registrants tend to be concentrated in certain occupations. In occupations where this is believed to be a significant phenomenon, information about current supply may be available from other sources such as professional associations, union hiring halls, etc.

FORECAST SUPPLY

Definition: The number of new people who will become available for employment in the occupation during the forecast period.

Source: The sum of new entrants, re-entrants, in-migrants, and in-transfers.

NEW ENTRANTS

Definition: New entrants might technically be defined as persons with no previous work experience. However, for the purposes of this analysis, it is more appropriate to define new entrants as those persons without substantial work experience, or whose previous principal activity has never been employment. Thus, students who may have held casual jobs during their school years would be counted as new entrants.

GRADUATES OF OCCUPATIONAL PREPARATORY PROGRAMS

Definition: The number of people who are expected to complete formal occupational training programs, either institutional or O.J.T., during the forecast period, and who are expected to enter the local labor market.

HIGH SCHOOL AND COLLEGE GRADUATES AND DROP-OUTS WITHOUT SPECIFIC VOCATIONAL PREPARATION

Definition: A very large number of school graduates who will enter the labor market have no specific occupational preparation. Consequently, they cannot be assigned as supply for a specific occupation. Nevertheless, they must be counted as supply for those entry occupations which require no training and which are commonly filled by untrained school graduates.

MILITARY RETURNEES

Definition: Men returning from the armed forces and entering the labor market constitute additions to labor supply.

LABOR FORCE RE-ENTRANTS

Definition: This supply item includes people who are re-joining the labor force after a substantial absence. The principal group are women who re-enter the labor market after raising their families. People who take vocational preparatory training courses prior to re-entry should be classified as "Graduates of Occupational Preparatory Programs" above.

Source: An estimate of this number can be calculated by applying national re-entrant rates for females. Care must be taken in assigning them as supply for specific occupations to allow for skill deterioration and the fact that they will not reflect the current occupational profile of the area, but the occupational profile of female employment in the area some years ago.

IN-MIGRANTS

Definition: A sizeable source of occupational supply may be created by persons moving into a study area from other geographical areas. This component includes all workers who move into the area, regardless of the level or source of their occupational preparation. (Consequently, graduates of schools in other areas are classified as migrants for estimating purposes.)

If it were possible, it would be desirable to develop separate data on the gross in-migration and gross out-migration which is expected to occur over the forecast period. However, no methodology exists which would allow such an analysis. Consequently, migration methodologies measure only the net effect of in- and out-migration. (Note that net out-migration constitutes a labor demand item and should be analyzed as such. The estimating methodology is the same as for net in-migration, however.)

OCCUPATIONAL TRANSFERS

Definition: Persons leaving one occupation for another occupation within the same labor market area constitute out-transfer and in-transfers. It should be noted that the total number of out-transfers occurring in all occupations during a given period (a demand item) equals the total number of in-transfers to all occupations during the same period (a supply item). This informal up-grading and down-grading of skills that occurs as people move from one occupation to another is a highly significant variable, which has traditionally been ignored.

Care must be taken to distinguish occupational transfers, which involve movement from one occupation to another occupation, from mere job changes, which may involve a change of employer and a change of industry but do not involve changes of occupation. The activity that is counted as out-transfers and in-transfers will obviously depend partly upon the occupational detail being used.

Note that this item includes only people who leave a job in another occupation in this area; it does not include migrants who may also be changing occupations. Note that the total number of in-transfers in all occupations equals the total number of out-transfers.

Source: Since out-transfers cannot be measured separately from in-transfers, it is necessary to estimate the net effect of movements into and out of an occupation. An excess of out-transfers over in-transfers constitutes additional demand, while an excess of in-transfers constitutes a supply item.

Source: 1967 Lane County Labor Skill Survey
Eugene Research Office
Oregon Department of Employment
January 1968

Revised: CIS 5/72

OIAS Occupational Title _____

OIAS Occupational Code _____

DOT Title

DOT Code

Summary

Employment, Total

Female Q# 7

Data 17-19 _____

People 20-24 _____

Things 14-16 _____

Physical Demands

1 (S, L, M, H, V) 1 _____

2 (Climbing)

3 (Stooping)

4 (Reaching)

5 (Hearing) 3 _____

6 (Seeing) 2 _____

1 (I, O, B) 6 _____

Working Cond's.

2 (Cold)

3 (Heat)

4 (Wet)

5 (Noise)

6 (Hazards)

7 (Fumes)

Trng.

GED 8 _____

SVP 8 _____

WT Groups: p.#

Aptitudes

G 13 _____

V 11 _____

N 12 _____

S

P

Q 10 _____

K

F 9 _____

M

E

C

Interests

Temperments

CIS

Occupational Information Description Source Record

Occ. Title:_____ Occ. Code:_____

COMMON SECTION

NATURE OF THE JOB

Function:_____

_____

Job Duties:_____

_____

Occupational Specialities:_____

_____

WORKING CONDITIONS

Environment:_____

_____

Work Schedule:_____

_____

QUALIFICATIONS

Native Qualifications:_____

_____

Legal Qualifications:_____

_____

INSTITUTIONAL SETTING

Education, Training, Experience:_____

_____

Employers:_____

_____

Promotional Ladder:_____

_____

Occ. Title:_____ Occ. Code:_____

AREA SPECIFIC SECTION

INSTITUTIONAL SETTING

Training Sources:_____

Employee Organizations:_____

Hiring Channels:_____

EMPLOYMENT AND EARNINGS

Current Employment:_____

Personal Characteristics:_____

Wages and Supplements:_____

EMPLOYMENT PROSPECTS

Demand:_____

Supply:_____

Supply/Demand:_____

CIS 4/72

ID-1
DATA
CIS-5/72

NOTE:

1. The data are
   a. current to: _____ (date)
   b. to be updated _____ (date)
2. The data cover
   a. these occupations: _____
   _____
   b. all areas of the state? Yes___ No___. What areas? _____
   _____
3. The data was compiled
   a. using what methods? _____
   _____
   b. for what reason? _____
   _____
   c. by whom? _____
   _____

ID-2
Register
CIS-5/72

NOTE:

1. The Register is
   a. current to: _____ (date)
   b. to be updated: _____ (date)
2. The Register includes
   a. practitioners of these occupations: _____
   _____
   b. all persons licensed and/or registered and practicing? Yes ____ No ____
   c. persons licensed and/or registered but not practicing? Yes ____ No ____
   d. non-residents licensed and/or registered? Yes ____ No ____
   e. cross listing by geographic location? Yes ____ No ____
   f. additional information (i.e., age, sex, etc.) on registrants? Yes ____ No ____

ID-3
Prof. Assoc.
CIS-5/72

NOTE:

1. Information is
   a. current to: _____ (date)

   b. to be updated: _____ (date)

2. Professional association includes
   a. practitioners of these occupations: _____
   _____

   b. members in all areas of the state? Yes___ No ___. What areas? _____
   _____

   c. all practitioners of the occupation(s)? Yes ___ No ___

3. Association publication includes
   a. a listing of names and addresses of all members? Yes ____ No ____

   b. a cross listing of all members by geographic location? Yes ____ No ____

   c. personal characteristics (age, sex, etc.) of members? Yes ____ No ____

ID-4
Lic. Bd.
CIS-5/72

NOTE:

1. Term of office of licensing board members expires: _____
   _____ _____

2. Qualifications (occupation, age, etc.) for positions on the board are: _____
   _____

3. Occupation of licensing board members is indicated? Yes ____ No ____

ID-5
Info Item
CIS-6/72

Occupational Title: _____

OIAS Code: _____

Source: _____ Information Item: _____

_____ _____

Remarks:

APPENDIX H

Career Information System

NUMERICAL LIST OF OCCUPATIONS

Revised 8/72

11 ADMINISTRATIVE OCCUPATIONS

(General Administrative)

1132 Hotel and Motel Managers
1134 Hospital Administrators
1136 Education Administrators
1138 Public Administrators
1142 Small Business Operators
1144 Business Executives
1152 Construction Superintendents
1154 Production Superintendents
1162 Sales and Service Managers
1172 Military Officers

(Administrative Staff)

1184 Buyers and Purchasing Agents
1186 Personnel Managers
1195 Public Relations Workers

14 CLERICAL OCCUPATIONS

(General Clerical)

1411 Office Managers
1412 Secretaries
1414 Stenographers
1416 Clerk Typists
1418 General Office Clerks
1422 Teacher Aides

(Reception)

1452 Receptionists
1454 Telephone & Telegraph Operators
1456 Messengers

16 BOOKKEEPING-ACCOUNTING OCCS.

(General Accounting)

1614 Accountants and Auditors
1616 Bookkeepers

(Credit and Collection)

1634 Appraisers and Underwriters
1636 Loan Officers
1642 Cashiers and Bank Tellers
1646 Railroad Clerks

(Data Processing)

1684 Programmers & Systems Analysts
1686 Computer Operators
1688 Key Punch Operators

(Other Office Machine Operators)

1692 Office Machine Operators

21 SOCIAL RESEARCH & PLANNING OCCS.

2144 Social Scientists
2164 Social Program Planners
2174 Freelance Writers
2176 Reporters and Editors

23 ENGINEERING & DESIGN OCCUPATIONS

(Planning)

2314 Urban Planners
2316 Architects
2318 Ecologists

23 ENGIN. & DESIGN OCCS. (Cont.)

(Math)

2332 Mathematicians & Statisticians

(Engineering)

2354 Engineers
2356 Engineering Technicians

(Drafting)

2364 Draftsmen
2366 Interior Designers & Decorators

26 LABORATORY OCCUPATIONS

2624 Physical Scientists
2626 Earth Scientists
2628 Soil Scientists
2644 Opticians
2654 Medical Technologists
2656 Laboratory Testers
2672 Quality Control Inspectors
2674 Sanitarians

31 MECHANICS OCCUPATIONS

(Mobile Equipment)

3112 Automobile Mechanics
3114 Truck & Heavy Equip. Mechanics
3116 Aircraft Mechanics
3118 Small Engine Repairmen
3124 Service Station Attendants
3126 Oilers

(Heavy Machinery)

3142 Millwrights
3144 Industrial Machinery Repairmen
3146 Heat & Cooling System Mechanics

31 MECH. OCCS. (Cont.)

(Small Machinery)

3164 Office Machine Repairmen
3166 Telephone Installers-Repairmen
3168 Radio and TV Repairmen
3169 Appliance Repairmen

(Instruments)

3184 Jewelers
3186 Instrument Repairmen

34 BUILDING MAINTENANCE OCCUPATIONS

(Commercial Building)

3422 Building Maintenance Men

(Cleaning)

3454 Room Maids
3455 Janitors
3456 Domestic Service Workers

41 AGRICULTURAL & FORESTRY OCCS.

(Forestry)

4124 Foresters
4126 Fish and Wildlife Specialists
4128 Forestry Aides

(Horticulture)

4144 Groundskeepers and Gardeners
4146 Floral Designers

(Commercial Agriculture)

4164 Farmers and Farm Managers
4166 Farm Workers
4168 Seasonal Farm Laborers

42 CONSTRUCTION OCCUPATIONS

4222 Powdermen
4242 Painters
4244 Plasterers
4246 Cement and Concrete Finishers
4254 Carpenters
4264 Bricklayers
4274 Plumbers
4276 Floor Layers
4278 Roofers
4286 Construction Laborers
4288 Railroad Laborers

43 FOOD PRODUCTS OCCUPATIONS

4324 Bakers
4326 Meat Cutters
4328 Commercial Fishermen
4348 Cannery Workers

44 TEXTILE AND APPAREL OCCUPATIONS

(Textile Manufacturing)

4424 Textile Machine Operators

(Apparel Manufacturing)

4442 Clothes Designers-Patternmakers
4446 Seamstresses and Tailors
4448 Sewing Machine Operators

(Laundry)

4464 Laundry & Dry Cleaning Workers

(Other)

4494 Upholsterers
4496 Shoe Repairmen

45 TIMBER PRODUCTS OCCUPATIONS

4514 Fallers and Buckers
4516 Chokersetters

(Sawmill and Plywood)

4522 Sawmill Log Handling Occups.
4524 Plywood Log and Block Handlers
4526 Veneer Production Occupations
4528 Planer Mill Occupations
4532 Sawmill Sawing Occupations
4534 Sawmill Drying Occupations
4536 Sawmill Greenchainmen
4538 Lumber Graders and Inspectors
4542 Sawmill Waste Recovery Occups.
4544 Veneer Drying Occupations
4546 Veneer Salvage & Upgrading Occs.
4548 Plywood Lay-Up Occupations
4552 Plywood Finishing Occupations
4554 Plywood Laborers
4556 Woodworking Machine Operators
4559 Sawmill Laborers

(Pulp and Paper)

4574 Pulp and Paper Workers

(Furniture)

4584 Furniture Making Machine Oprs.
4586 Cabinetmakers

47 GRAPHIC ARTS OCCUPATIONS

4724 Commercial Artists & Designers
4734 Photographers
4766 Printing Occupations

54 METAL WORKING OCCUPATIONS

(Refining and Casting)

5421 Metal Refining Occupations
5422 Metalworking Patternmakers

54 METAL WORK. OCCS. (Cont.)

(Refining & Casting cont.)

5424 Molders
5426 Foundry Workers

(Machining)

5462 Tool and Die Makers
5464 Machinists
5468 Saw Filers and Tool Sharpeners
5472 Machine Tool Operators

(Metal Joining and Fabricating)

5482 Welders
5484 Sheet Metal Workers
5486 Body and Fender Repairmen
5488 Blacksmith & Forge Shop Workers

56 ELECTRICITY & ELECTRONICS OCCS.

(Electricity)

5624 Linemen
5626 Electricians & Elect. Repairmen

(Electronics, Technical)

5664 Broadcast Technicians

(Electronics, Manufacturing)

5686 Electronics Assemblers

59 OTHER PRODUCTION OCCUPATIONS

5914 Petroleum Processing Occups.
5918 Rubber & Chemical Process Occs.
5924 Rubber and Plastics Fabricators
5926 Production Painters & Finishers
5944 Powerhouse Firemen
5946 Sewage Plant Operators
5966 Production Assemblers
5982 Hand Craftsmen

61 TRANSPORTATION OCCUPATIONS

(Managerial and Technical)

6126 Air Traffic Controllers
6128 Railroad Conductors

(Transportation Equipment Operators)

6142 Bus and Taxi Drivers
6144 Truck Drivers
6152 Bulldozer Operators
6154 Operating Engineers
6156 Yarding and Loading Occupations
6158 Industrial Truck Operators

(Other)

6172 Railroad Engineers and Firemen
6174 Railroad Brakemen and Switchmen
6184 Ship Officers and Engineers
6188 Pilots and Flight Engineers

71 STOCK CONTROL OCCUPATIONS

7112 Car Loaders
7114 Warehousemen
7116 Shipping and Receiving Clerks
7118 Stock Clerks
7122 Mail Carriers
7124 Newspaper Carriers
7126 Packers and Wrappers
7134 Box Boys
7164 Librarians
7166 Library Assistants

74 SALES OCCUPATIONS

7414 Commodities Salesmen
7415 Securities Salesmen
7416 Insurance Salesmen
7417 Real Estate Salesmen
7418 Automobile Salesmen
7422 Business Services Salesmen
7434 Routemen
7454 Salespersons
7484 Sales Clerks

78 FOOD SERVICE OCCUPATIONS

(Cooking)

7824 Chefs and Dinner Cooks
7826 Fry Cooks

(Serving)

7852 Bartenders
7854 Waiters and Waitresses
7856 Stewards and Stewardesses

(Clean-up)

7884 Kitchen Helpers
7888 Bus Boys

81 HEALTH SERVICE OCCUPATIONS

(Administrative, Diagnosis)

8112 Physicians
8113 Dentists
8114 Veterinarians
8115 Optometrists
8116 Dietitians
8117 Physician's Assistants

(Treatment)

8124 Pharmacists
8126 Physical Therapists
8128 Speech and Hearing Specialists

(Nursing)

8162 Registered Nurses
8164 Licensed Practical Nurses
8166 Nurse Aides and Orderlies
8174 Dental Hygienists
8176 Dental Assistants
8182 Morticians
8184 Barbers
8186 Cosmetologists

84 SOCIAL SERVICE OCCUPATIONS

(Guidance)

8414 Counselors
8416 Caseworkers
8418 Psychologists
8424 Social Service Specialists
8428 Social Service Aides
8432 Lawyers
8436 Clergymen

(Education)

8454 University and College Teachers
8456 Elementary & Secondary Teachers
8458 Education Program Specialists
8459 Child Care Workers

(Recreation)

8482 Recreation Program Directors
8486 Recreation Leaders
8488 Recreation Aides

94 PROTECTIVE SERVICE OCCUPATIONS

9414 Law Enforcement Officers
9426 Firemen
9436 Military Enlisted Men
9476 Watchmen

98 ART AND ENTERTAINMENT OCCUPATIONS

9824 Radio and Television Announcers
9842 Models
9866 Performing Artists

GLOSSARY

Area - refers to the geographic area of the state for which occupational information has been localized

Area Code - code number designating geographic areas for localized information (00 = common file, 99 = statewide file, 26 = Portland, 20 = Lane County, 06 = Coos-Curry Counties, etc.,)

ATTR - Attribute file, displays QUEST responses that correspond to requirements for an occupation

BIB - Bibliography file

BLS - Bureau of Labor Statistics of the U.S. Department of Labor

CIS - Career Information System, the organization that develops information, manages delivery systems, and delivers information to users.

CIS Board - the governing body of the Career Information System Consortium

CIS Coordinators - those persons designated and trained to guide the usage of the information delivery systems in each particular school or agency where it is used

CIS Consortium - the cooperative of Oregon agencies supporting CIS

Cluster - refers to groupings of occupations based on a common characteristic such as tasks, function, or skills and knowledges. Some have been designated as "Career Education Clusters" by State Department of Education

C.O.G. - Council of Governments

Common Section - the portion of the occupational descriptions containing information which applies to all areas of the State

Computer Printouts - printed copies of files, used with the Needle-Sort

CSPA - School of Community Service and Public Affairs on the University of Oregon campus, where the CIS Office of the Director is housed

Delivery Systems - any systematic process for delivering career information, includes exploratory and information retrieval components. The computer version and the needle-sort are the delivery systems of CIS

DESC - occupational description file stored and accessible in the computers

D.O.L. - U.S. Deaprtment of Labor

D.O.T. - Dictionary of Occupational Titles

Dump - a printout of an entire file, e.g. a description file or the school file

D.V.R. - Division of Vocational Rehabilitation of the Oregon Department of Human Resources

ECC - Educational Coordinating Council of the State of Oregon

E.D. - Oregon Employment Division (employment security agency) of the Oregon Department of Human Resources

EDUC - the educational and training information file of OIAS
Education Components - the Preparation, Programs of Education and Training, and School files. Development funded by Fund for the Improvement of Post-Secondary Education
E.S. - Employment Service, a branch of the Oregon Employment Division

F.I.P.S.E. - Fund for the Improvement of Post-Secondary Education, the Federal funding source for the Educational Components project
File - each specific area of computer storage which contains occupational descriptions, visits, Programs of Education and Training, etc.,

GATB - General Aptitude Test Battery--an aptitude test widely used in Employment Division Offices
GATB--Interest Checklist - a computerized scoring of the GATB and the U.S. Employment Service Interest Checklist relating the results to D.O.T. worker trait groups (also called "search")

HP - Hewlett-Packard computers which run the CIS computer programs. Currently HP models 2000 C and HP 2000 F run the CIS programs.

IBM 360 - International Business Machines Model 360 Computer. Originally the OIAS program was run on an IBM 360
IED - Intermediate Education District, county educational service districts
In-Service - the basic introduction and instruction given to counselors, career education coordinators, and persons using the System in their schools or agencies
IPAR - a community resource scheduling center in Portland

J.I.S. - Job Information Service, an information center within Employment Division offices
Job Bank Openings Summary (JBOS) - monthly summaries of E.S. Job Bank transactions, on microfiche

M.A. - Manpower Administration of the U.S. Department of Labor
Manpower Economists - area economists working for the State Employment Division local offices.
METCOM - the Portland Metropolitan Area computer facility operated by Multnomah County Intermediate Education District
MIC - Manpower Information Clearinghouse, the program planning assistance function of CIS
MTIS - Manpower Training Information System, a management and planning information system for local program planners under development by the Manpower Information Clearinghouse and Lane County

Needle-Sort - the manual card-sort delivery system used by CIS to deliver occupational and educational information
N.I.E. - National Institute of Education
NOIS - National Occupational Information Service, the new Department of Labor office responsible for implementation of occupational information systems nationwide

OES - Occupational Employment Survey, a series of employer surveys used to produce occupational employment statistics

Office of High School Relations - the division of the Chancellor's Office in the State System of Higher Education responsible for high school-college relations

OIAS - Occupational Information Access System, the original computer delivery system of CIS

On-line - refers to the immediate availability of information and programs in the computer. The OIAS programs and information files are on-line

OSSHE - Oregon State System of Higher Education

OTIS - Oregon Total Information System, the Eugene based computer service providing computer services to elementary and secondary schools in several areas of the state outside the Portland Metropolitan area

QUEST - the questionnnarie by which the System user can begin an organized exploration of occupations

QUEST list - the list of occupations printed out for the System user after the user has in-put his or her QUEST responses.

QUEST-2 - a sub-project of CIS involving development of a revised questionnaire which substitutes interest and temperament factors for the data-people-things approach of the current QUEST questionnaire

R & S - Research and Statistics section of the Oregon Employment Division

Regional Career Education Coordinators - staff of State Department of Education and intermediate eudcation districts who coordinate career education services. Many serve as regional coordinators for CIS as well

Service Agreements - the contractual documents under which CIS provides services to schools and agencies, including responsibilities to be discharged and the fees for such services

SDE - Oregon State Department of Education

STATPG - the computer program that keeps account of programs and files being used

Standards for Use - a statement of the conditions established by the CIS Board and basic responsibilities required of institutions or agencies using the CIS information delivery systems

S.U.T.O.E. - Self-Understanding Through Occupational Exploration, a career exploration class taught in many Oregon junior high schools

Teletype terminal - a device used to access the computer version in schools and agencies

Update - the process whereby the information files are revised and made current

UPDATE - the CIS newsletter

User - refers either to the individual person who uses one of the delivery systems or a school or agency where the System is installed and in use

User's Handbook - a booklet for the individual user which contains the QUEST questionnaire, occupation, programs, and school lists, and instruction for using the delivery system

U.S.O.E. - U.S. Office of Education

VISIT - a file available on-line in the computer whereby local area users can get names, addresses, and phone numbers to contact persons working in different occupations

V.R.D. - Vocational Rehabilitation Division of the Oregon Department of Human Resources

XPLOR - an information file on-line in the computer system which contains information about Explorer Scout Posts concentrating on specific careers and how to contact them